# A STUDY ON

# VALIAZHAL KEELVAYU

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# INTRODUCTION

**Medicine**, as everyone knows, it is not merely, a science, but an art as well. There are different systems of medicine in the world, according to the way of life of the people and their geographical conditions.

The **Siddha System of Medicine** is an ancient and traditional one with prestigious background of Tamil culture. It is one of the pillars of the Indian System of Medicine. Siddha System of Medicine is dedicated bequest of Siddhars, cheerfully given to the human society to live long and free from diseases.

**Siddhars** were men of highly cultured, intellectual and spiritual faculties, combined with super natural powers. Siddha medicine is the one, which prevents the body and mind from a diseased condition by curing the disease and by working also as a rejuvenating process for further prevention of the same by treating the whole body as whole.

Nature's wealth is being destroyed by the change in the life style with advanced technologies. This has an impact over the physical, social, cultural, moral, mental and spiritual values, which in turn affect the normal health. This health deterioration is meant as **disease**. According to the manuscripts as well as the evidence found out, disease may occur due to the derangement of either the external or internal factors.

The internal factors include illness occurring due to the disturbance of three Humours, the seven Thathus, the three Gunas and the Malas. The external factors include seasonal changes or climatic variations or unlikable things like drug abusing or external stress ending in

psychosomatic disorders. Siddha medicine has basic principles to remove the distress and diseases.

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According to Siddha aspect, diseases are classified in to Vadha diseases, Pitha Diseases and Kapha diseases**. Valiazhal Keelvayu** is one among the vadha diseases mentioned in the Siddha literature. The clinical features of Valiazhal Keelvayu are similar to that of Rheumatoid Arthritis, mentioned in Modern Literatures. According to the Modern Medical Science, it is an autoimmune disease. Likewise, in Siddha system the Valiazhal Keelvayu is caused by deranged natural stamina (Eyarkai Vanmai). This deranged stamina reflects in the disciplines of three Thosas and seven Thathus.

This disease is a challenge to the world of Medicine, because it affects the patients mentally, physically, economically and also his domestic life. The number of affected patients is also getting increased. This leads to many patients in despair. Till now there is no definite cure for this disease in other system of medicine.

In order to fortify the hopes of Valiazhal Keelvayu patients, the author has selected this disease for the dissertation work on the basis of the Siddha concept. And also due to the unshakable belief among the people that the Vadha diseases can effectively managed by Siddha Medicine, the author choose it for dissertation. This study is an initial step and only a preliminary attempt for further research.

# AIM AND OBJECTIVES

The disease, **Valiazhal Keelvayu** produces tremendous pain and discomfort to the patients. So far a perfect and complete remedy for this disease has not yet been arrived at all. The purpose of the author's work is to elucidate a good medicine from the ancient Siddha Literature and to create hope and faith in the treatment. This being a preliminary endeavour by the author, as it would be a helping hand to the sufferers. With this view this dissertation subject was undertaken.

The other aims of this study are

- To collect authentic measures and review the ideas mentioned in ancient Siddha literature about the disease.
- To study the clinical features of the disease Valiazhal Keelvayu.
- To review the altered Tridosha or Mukkutram and changes in the physiology as per Siddha aspect.
- To study the disease Valiazhal keelvayu on the basis of Udal thathu, Paruva kaalam, food, taste, age, sex, socio-economic status, Ennvagai thervu, Neerkuri and Neikuri.
- To expose the unique diagnostic procedure mentioned in Siddha literature for the disease Valiazhal keelvayu.
- To know the extent of correlation of aetiology, signs and symptoms of Valiazhal keelvayu, in Siddha aspect with **Rheumatoid Arthritis** in Modern Medicine.

- To diagnose the disease on the basis of modern parameters
- To have a clinical trial on Valiazhal Keelvayu with Kumari Mathirai as internal Medicine and Nochi Thylam as external medicine on 28 inpatients and 30 outpatients.
- To have a detailed analysis to prove the clinical efficacy of the drugs through the pharmacological and biochemical analysis.
- To insist Thokanam, Asanaas, exercise, diet and life style modification along with medicine to achieve good results.

# REVIEW OF LITERATURE

## SIDDHA ASPECTS

**Valiazhal Keelvayu** is one of the Vatha diseases and Vatham is main deranged factor. It is then accompanied by Azhal (Pitham). According to Siddha medicine, diseases are due to derangement of Uyirthathukkal (Vatham, Pitham, and Kapham). To better understand about derange factors in Valiazhal keelvayu and their effects in body, a brief view of “Thiridosha Theory” is essential. Thiruvalluvar has quoted this as

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The Siddha system of medicine is based on the Thirdoshic theory. The three Cordinal Humours are Vatham, Pitham, and Kapham. They made up of Pancha Boothams.

The Siddha System considers the body as a whole make up of five basic elements namely,

1. Prithivi
2. Appu
3. Theyu
4. Vayu
5. Aagayam

The five elements are considered as the fundamental principle of all creations of God. This can be stated in the Sadhaga Naadi as

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Example:

Prithivi + Prithivi - Bones Prithivi + Vayu - Nerves

Prithivi + Appu - Muscles Prithivi + Agayam - Hairs

Prithivi + Theyu - Skin

Vatham is formed by air and space.

Pitham is formed by fire.

Kabam is formed by earth and water.

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They are called, as Uyir Thathus or Thiri Thathus in their normal proportion. These three humours are held in the ratio of 1: ½: 1/4 normally. This is stated in Kannusamiyam as

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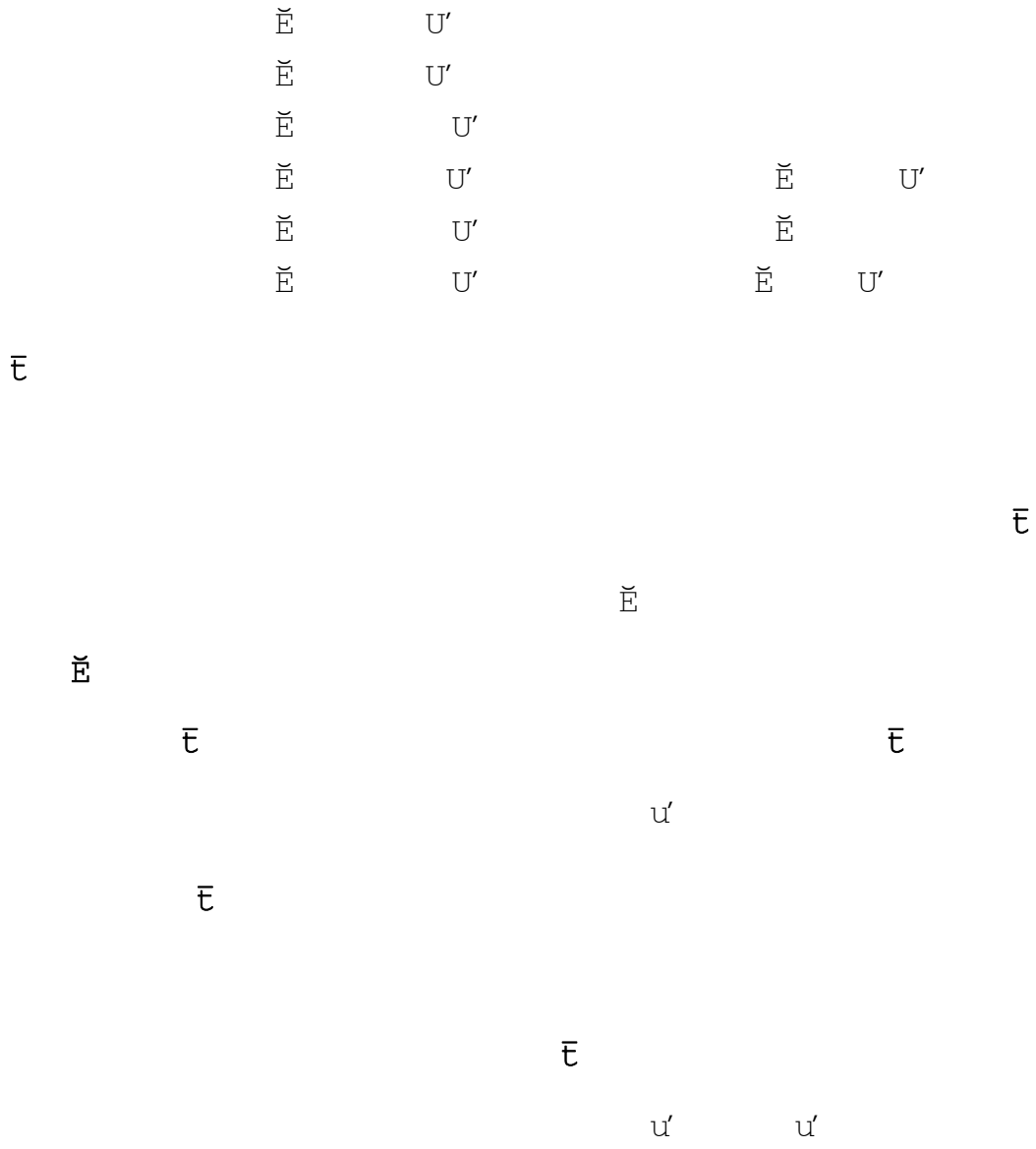
Three Thathus are accompanied by the Aru Suvaigal and this also made up of Pancha Boothams.



So any change in the Arusuvaigal and Panchaboothams lead to disharmony of the three Thathus and produce illness.

The Uyir Thathus in their normal condition regulate all physiological activities of the human beings and keep the body healthy.

When the mutual harmony of these Uyir Thathus is disturbed they are called three Thosas and they bring diseases. In Siddha system, based on the Thirdoshic theory, the diseases are classified into

- Vatha diseases
- Pithaa Diseases
- Kapha diseases

**VATHA DISEASE**

**Vadham** is a clinical condition characterized by pain swelling, pricking and loss of function due to vitiated Vadha which is the principal humour of the body.

**Aetiology And The Classification Of Vadha Diseases**

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Yugi Munivar Vaithia Cinthamani Perunool 800, Jeevaratchavmirtham, Dhanvanthiri Vaithyam -80 types, Anuboga Vathia Deva Ragasiyam – 84 types, Theriaiyar Vagadam – 81 types

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**Characteristic Features of Vadham**

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Loss of appetite, pain and redness, fever and cough, insomnia, shivering, pain in joints

Pain in joints, constipation, nervous weakness, shivering

Chillness of the body, rigor, pain and tenderness of joints, swelling of joints

**KEEL VAYU**

According to Agasthiar Gunavagadam, Keelvayu comes under the 80 types of Vadha disease. In Keel Vayu the most deranged factor is Vadham. So the Keel Vayu comes under the Vadha diseases according to Thiridoshic theory. Keelvayu is the general terms that include all kind of joint diseases. According to T.V.Sambasivan Pillai Dictionary, **Keel** means **joint**s and **Vayu** means **Vadham**. According to Sabapathy Manuscript, Keel Vayu is further divided into 10 types, in the text of Siddha Maruthuvam. The **Valiazhal Keelvayu** falls in this 10 sub divisions.

**Synonyms**

According to the Siddha Maruthuvam text,

1. Sandhu Vali
2. Muttu Vali
3. Mega Soolai
4. Muddakku Vayu
5. Amavatham

According to Agasthiar Gunavagadam,

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Synonyms are

1. Vayu Rogam
2. Vatha Rogam
3. Mudakku Vayu
4. Mudakku Vatham
5. Sandeega Siletuma Rogam
6. Kaikal Pidippu Rogam
7. Rasa Vatham
8. Soolai Kattu
9. Santhi Vatham
10. Vatha Soolai

**Iyal**

In Keel Vayu, Vadham and Kabam are deranged and produce pain and swelling in the joints associated with fever, restriction of joint movements, immobility of the joints, collection of fluids in the joints and unbearable pain in the joints.

**Noi Varrum Vazhi (Aetiology)**

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According to Siddha system, causes of disease are due to the disturbance of Thrithathus. In Keelvayu, the chief deranged factor, among the Thrithathu is the Vatham. The derangement of Vadham occurs under various conditions. They are

- ❖ Environmental factors
- ❖ Physical factors
- ❖ Factors of Kanmam

**Environmental Factors**

According to Sathaganaadi, the Vatha diseases are predominant in months from Aadi to Iypasi.

The Vadha Dosha is provoked in its own location in the Ani and Aadi (Thanilai Vazharchi), but it is provoked and spread beyond its location in the month Iypasi and Karthigai. (Vetrunilai Vazharchi). But it resumes its normalcy, in the rest of the year (Thanilai Adaithal).

**Physical Factors**

According to the text Siddha Maruthuvam,

Excessive intake of certain fruits and vegetables produces Vadha diseases, improper food in take, exposure to cold air, stay in hilly areas, over indulgence in sexual activity and hereditary factors produce Keel Vayu.

According to Agasthiar Gunavadagam,

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KeelVayu occurs due to dietary substances, which are degrading the chyle (Annarasam).

According to Yugi Chinthamani,

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Indulging in the sexual act during vitiation of Vadha, walking for a long distance, exposing to dampness and cold, harmful combination like excessive curd after eating fruit, vegetable and tubers causes toxic factors which affect bones and muscles and provide Vadha diseases.

According to Theraiyar Vagadam,

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Excessive walking in hot sun, excessive in take of water, over sexual indulgence, intake of bitter guard, etc.

According to Pararasa Segaram

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Excessive in take of bitter, astringent, salt taste food items, intake of old cooked rice, in take of rahi like cereals; sleeping during the day and awakening during night induce Vadha diseases.

**Factors of Kanmam**

In Siddha system, many diseases are said to be precipitated by Kanmam, which means that deeds of good or bad committed by an individual in his previous and present births. According to Agasthiar Kanmagandam 300, Vadha diseases may also precipated by Kanmam.

If attribute the following psychological factors, such as removing the bark of living trees, breaking the legs of the animals, cutting the branches of the living trees and removing leaves of the living trees produce Vadha diseases.

**Classification of Keelvayu**

According to Sabapathy manuscript the Keelvayu is classified in to 10 types. They are,

1. Vali Keelvayu
2. Azhal Keelvayu
3. Iya Keelvayu
4. **Valiazhal Keelvayu**
5. Valiaya Keelvayu
6. Azhalvali Keelvayu
7. Azhalaya Keelvayu
8. Iyavali Keelvayu
9. Iyaazhal Keelvayu
10. Mukkutra Keelvayu

# VALIAZHAL KEELVAYU

**Iyal**

**Valiazhal keelvayu** is one of the ten types of Keelvayu. It is a condition dealing with the inflammation of minor and major joints, especially phalangeal joints, Wrist joints, Ankle joints.

In this disease, first eructation (Aeppam) occurs due indigestion. Then gas is formed in abdomen, which results in constipation. Wrist, ankle and phalangeal Joints are mainly affected and there will be redness, pain and burning sensation in the affected joints. It is difficult to relieve the disease, even though, it gets relieved, it repeatedly occurs in the same joints and produce, Ankylosis. All the movements of the joints become restricted. It may be associated with insomnia, restlessness and mild fever.

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(Siddha Maruthuvam text)

**Valiazhal Keelvayu** is mentioned in various names in Siddha literatures as

| | | |
|---|---|---|
| Vathapitha Soolai | – | Thirumoolar – Karukkadai vaidhya kaviyam 600, Agathiyar Vadha kaviyam, Vaidhya Sara Sangiragam |
| Uthiravatha Suronitham | – | Yugi Vaidhya Sindhamani |
| Vatha Suronitham | - | Dhanvanthiri Vaidhyam |

**Prodromal symptoms**

- Nasal Block
- Running Nose
- Hoarseness of voice
- Mild fever
- Pain in the extremities
- Stabbing and excruciating pain in the affected joints
- Loss of appetite
- General Malaise

**Noi kurigunangal (Signs And Symptoms)**

According To Agathiar:

Restricted joint movements, Ankylosis in Upper and lower extremities; severe body pain

Swelling of the ankle joints, knee joints, meta torso phalangeal joints, Severe pain in the fingers, Psychological distress, Vitiation in Vali & Azhal kutram, Loss of appetite.

Swelling of wrist joints and phalenges, Black and red discoloration in the swelling of joints, Severe body pain.

Debility in Ratha Thathu (Aneamia), Swelling of joints, Restricted joint movements, Severe pain in upper and lower extremities.

**SIDDHA MODE OF PATHOLOGY**

**(Noi Nadal Noimuthanaadal)**

When the seven Udarkattugal and Mukkutram are in equilibrium a normal structural and physiological state of the body is ensured. As the Udarkattugal are affected by the extrinsic and intrinsic causative factors there will be deterioration in the structural and functional status of the body. When the causative factors take hold of Udarkattukal separately or in a combined form, it results, in coordination of functions, there by the disease manifest and expose its clinical factors.In Valiazhal Keelvayu due to factors related to diet, habit, environment etc adversely influence vali and Azhal mainly in Mukkutram.

Vali is said to be the phenomena responsible for the movements of the parts involved in locomotor system, hence it is responsible for the

articulation of the joints.The involvement of Vyanavayu and Abanavayu plays a prime role in the manifeststion of signs & symptoms. Vyanan is responsible for all the moter and sensory functions of the body and the nutrition of tissues. Abanan is responsible for the assimilation of the nutritional factors from the gastro intestinal tract distribution between various thathus and expulsion waste product through faeces, urination etc.

The Azhal is responsible for the healthy maintanence of every tissue of the body and its variation results in inflammatory changes in the bone and other accessory structures like tendons, cartilage and synovial membrane which helps in perfect articulation of the joints.

The deterioration of the two main kutram may also accompany Iyakutram. The deterioration of Iyakutram leads to structural changes in the bones and the fluids in the joints which are mainly controlled by the factors of Santhigam. Disturbances in Mukkuram produce different clinical manifestations. There include swelling of joints, pain, stiffness, and restriction of movements due to disturbed Vali. Inflammatory changes of the joints like redness hyperemia and warthness due to disturbed Azhal and erosions of bone margin, increased synovial fluid due to disturbed Iyam.

Santhaga Iyam is said to be the phenomena responsible for the normal maintenance of the synovial fluid. Synovial fluid provides nutrition for articular cartilages disc and menisci there by avoids friction and erosion of the bone.

**DIFERENTIAL DIAGNOSIS**

**1. Vali Keel Vayu**

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It is characterized by excruciating pain and swelling in toes, knee joints, elbow joints, shoulder joints and associated with systematic disturbances like dryness of mouth, pyrexia, head ache, palpitation, constipation and sweating.

**2. Azal Keel Vayu**

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It is characterized by swelling of joints associated with severe pain and fever. Since, it is not quickly responding to the medicine, the prolonged proper medical care is said to be essential.

**3. Iya Keel Vayu**

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It is characterized by unbearable pain in the joints, associated with emaciation of the body, anorexia, insomnia, cough, hiccough, vomiting, Anemia and dropsy.

**4. Azal Vali Keelvayu**

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It is characterized by pain and swelling of the joints associated with bitter taste, vomiting, fainting and bleeding from gums. It occurs due to walking in hot sun, intake of food that aggravate pitham and sadness.

**In Pillai Pini Edu**

The symptoms resembling to Juvenile Rheumatoid Arthrities are explained as follows

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In this disease, which affected the children, the fingers become swollen with fever, constipation and intolerable pricking pain. Twenty days later larger joints also will be affected.

## PINIYARI MURAIMAI (DIAGNOSIS)

Poriyalarithal (inspection)
Pulanarithal (Palpation)
Vinatal (Interrogation)
Envagai thervugal

### Poriyalarithal

Poriyalarithal means the art of perception of five organs viz:

1. Nose
2. Tongue
3. Eyes
4. Ears
5. Skin

### Pulanarithal

It is an art of knowing objective senses viz:

1. Smell
2. Taste
3. Vision
4. Hearing
5. Touch

In both the above said methods, physicians' Pori and Pulan are used as took for examine the Pori and Pulan of the patients.

### Vinathal

It is a method of history taking. About 50% of diagnosis is made upon history taking. The history of entire illness can be obtained from the patients and his relatives.

**Envagai Thervugal**

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It is the unique method in Siddha system for diagnosis. It is most useful even in unconscious patients also.

According to Theraiyar, the envagai thervugal are

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1. Naadi
2. Sparisam
3. Naa
4. Niram
5. Mozhi
6. Vizhi
7. Malam
8. Moothiram

**Naadi (Pulse)**

Among the Envagai Thervugal Naadi is the important one. Naadi is felt as Vatham, Pitham, and Kapham respectively with the tip of the index, middle and ring fingers over the lower end of the radius.

Normally Vatham, Pitham and Kabam are held in the ratio of 1: ½:1/4 derangement in this ratio will reflect as disease.

Naadi Nadai in Keelvayu

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When Vatha and Pitha are vitiated, pain occurs in the joints.

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When kaba vitiated with vatha, it causes pain and swelling in the joints.

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- In Valiazhal keelvayu the following naadinadai are seen commonly

  - Vathapitham
  - Vathakapham
  - Kaphapitham

**Sparisam (Palpation)**

It is the art of touch. In valiazhal Keelvayu, warmthness, pain, swelling, tenderness, subcutaneous nodules can be noted.

**Naa (Tongue)**

The colour, coating, pallor, ulceration, excessive salivation, dryness, glossitis, fissures etc. of the tongue can be noted.

- In Vali Azhal Keelvayu, the tongue may pallor, coating.

**Niram (Colour)**

By examining the niram, cyanosis, redness, pallor and yellow discolouration can be noted. Colour of the skin all over the body and local region of affection should be observed.

- There is local region of affection due to inflammation is seen in Valiazhal Keelvayu.

**Mozhi (Speech)**

It constitutes high or low-pitched voice, slurring and incoherent speech and hoarseness of voice.

**Vizhi (Eye)**

Both motor and sensory disturbances of eye are noted. Pallor and colour of the conjunctiva are also noted.

**Malam (Stools)**

Quantity, colour, odour of the stools, constipation, diarrhoea, presence of blood, undigested matter etc. can be found out.

- Constipation is noted in some cases of Valiazhal Keelvayu.

**Moothiram (Urine)**

In Moothiram, Neerkuri and Neikuri can be found out.

**Neerkuri**

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From the above quoting Neerkuri consists of the following five characters.

1. Niram – It indicates the colour of the urine.
2. Manam - It indicates the smell of the urine.
3. Edai - It indicates the specific gravity of the urine.
4. Nurai -It indicates the frothy of the urine.
5. Enjal -It indicates the quantity of the urine.

**Neikuri**

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The patient is advised to take a balanced diet and should have a good sleep prior to the day of urine examination. After waking up from the bed; the first urine voided by the patient is collected in a container. The analysis should be performed with in one and a half hours. A drop of gingili oil is dropped into the glass container without shaking. The spreading nature of the oil is examined in direct sunlight.

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Though the urine should be examined only in the morning, during emergency it may be done in any time.

**1. Vatha Neer**

If the oil spreads like snake, it indicates the Vatha Neer.

**2. Pitha Neer**

It the oil spreads like a ring, it indicates Pitha Neer.

**3. Kapha Neer**

If the oil does not spread and gives an appearance of a pearl, it indicates the Kaba Neer.

**Thontha neer**

When the drop oil shows two shapes enclosed with in one another it indicates Thonthaneer.

- In Valiazhal Keelvayu the Vadha Neer And Kapha Neer are noted.

**Paruvakalam (Seasonal Effects)**

Siddhars have classified a year into six seasons each, constituting two month. They are some of the diseases are more prevalent during a particular Parvakalm and study of it will be of much use for diagnosis.

Here is a table of the principal seasonal effects:

| S.No | Kaalam | Synonym | Kutram | Suvai |
|---|---|---|---|---|
| 1. | Kaar Kaalam<br>[Avani to Purattasi<br>ie Aug to Oct] | Early<br>Rainy | Vatham ↑↑<br>Pitham ↑ | Inippu<br>Pulippu<br>Uppu |
| 2. | Koothir Kaalam<br>[Iyppasi to Karthigai<br>ie Oct to Dec] | Late rainy<br>Autumn | Vatham(-)<br>Pitham ↑↑ | Inippu<br>Kaippu<br>Thuvarppu |
| 3. | Munpani Kaalam<br>[Margali to Thai<br>ie Dec to Feb] | Early dew<br>Winter I<br>Part | Pitham (-) | Inippu<br>Pulippu<br>Uppu |
| 4. | Pinpani Kaalam<br>[Maasi to Panguni<br>ie Feb to Apr] | Late dew<br>Winter II<br>Part | Kapham ↑ | Inippu<br>Pulippu<br>Thuvarppu |
| 5. | Elavenir Kaalam<br>[Chitthirai to Vaigasi<br>ie Apr to Jun] | Early<br>Summer | Kapham ↑↑ | Kaippu<br>Karppu<br>Thuvarppu |
| 6. | Muthuvenir Kaalam<br>[Aani to Avani<br>ie Jun to Aug] | Late summer | Kapham(-)<br>Vatham ↑ | Inippu |

↑↑ Accumulation (Thannilai Valarchi)
↑ Aggravation (Vetrunilai Valarchi)
(-) Allieviation

Some of these are more prevalent during a particular Paruvakkalam and study of it will be much use for diagnosis.

- In case of Valiazhal Keelvayu the prevalence of the disease in **Kaarkalam** and **Muthuvenil Kalam** due to the Vetrunilai Valarchi and Thanilai Valarchi of Vali. Excessive intake of sour fruits and tubers will leads to twitching pain in the Vertebral column, pain in the ankle and knee joints.

**Thinaigal lands (geographical areas)**

Geography affects a person in a same manner as the seasons. Nilam is classified into 5 types, depending on the surroundings. Vegetation, landscape and ecological state.

Types of land, synonyms, common diseases

| S No | Thinaigal lands | Geographical Area | Common diseases |
|---|---|---|---|
| 1. | Kurinji<br>Hilly area | Mountains & its surroundings | Vali, Iya disease<br>Liver disease |
| 2. | Mullai<br>Sylvian area | Forest & its surroundings | Azhal, Vali, Liver Diseases |
| 3. | Marutham<br>Fertile area | Fields & its surroundings | Ideal place for healthy living |
| 4. | Neithal<br>Coastal area | Sea & its Surroundings | Vali, Liver diseases |
| 5. | Paalai<br>Arid area | Desert & its Surroundings | Vali, Azhal, Iyam diseases |

- Valiazhal Keelvayu is a Vadha disease, which mainly occurs in Neithal area and also in Kurinji, Mullai, and Palai. Now diseases are occur in Marutham also because of pollution, seasonal changes and life time modifications.

**Udal Vanmai (Body Immunity)**

Siddhars classified the immunity into three kinds. They are

- Iyarkai Vanmai
- Kaala Vanmai
- Seyarkai Vanmai

**Iyarkai Vanmai**

One can inherit his immunity by birth naturally.

**Seyarkai Vanmai**

One can acquire his immunity through various food, activities and medicines.

**Kaala Vanmai**

One can inherit his immunity at his different age and different seasons. (Paruvakaalam).

- Valiazhal Keelvayu is due to altered Iyarkai Vanmai and established due to altered Kala Vanmai and Seyarkai Vanmai.

**Uyir Thathukal/Mukkutram/Thirdosha**

The theory mukkuthram forms the foundation of Siddha. The primary position relegated to the equilibrated state of mukkutram in this definition of a healthy man indicates their importance in the maintenance of health. It can also be surmised that any disturbance in that equilibrated state leads to the development of disease in the body. They are

- Vazli
- Azhal
- Iyam

**I. Vali or vayu**

Vali is not merely wind, but also that which causes motion, energy and sensation of every cell in the body. Vayu relates to the nerve force. It

is responsible for all movements in the mind and the body. In Western terms, it is the electricity setting the organism into motion, maintaining the equilibrium between Azhal and Iyam.

In the human body the loco motor activity functions through voluntary muscles and its activities controlled by nerves system called Kanmendriyam, Likewise the sensation and its activities are known as Gnanendriyam. These types of activities are governed by Vali Kutram among the Mukkutram.

The nerve cells are also governed by Vali (Vatha) Kutram. During stimulation the nerve cells become repolarized and depolarized into positive and negative charged waves by the help of Dhasavays. This conducts the signals and information from one part to another.

**Seats of Vali**

- Below the Navel region (umbilicus)
- Urinary bladder, skin, nerves, bone, joints, muscles, hair follicles, motion, spermatic cord, umbilical cord, pelvis, ear and thigh.

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**Natural Properties of Vali**

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Giving briskness, Expiration & Inspiration, Functioning of mind through out body, Regulation of 14 physiological reflexes (Natural urges), Make the uniform functioning of 7 Udal Kattugal, Protection and strengthening of 5 Sensory organs

**Qualities of Vatham**

Own Attributes:

Roughness, Dryness, Lightness, Coolness, Mobility, Subtlety

**Opposite Attributes**

Softness, Unctuousness, Heaviness, Hot, Stable, Solid

**Varities of Vatham**

The Vali is divided into 10 types according to their location and functions.

| Sl.No | Division | Functions |
|---|---|---|
| 1. | Pranan | Respiration, Digestion |
| 2. | Abanan | Expel stools, urine, semen & fetus |
| 3. | Viyanan | Nourishes whole body |
| 4. | Uthanan | Speech, expel vomitus, hiccup |
| 5. | Samanan | Assimilation of end products, regulates other forces |
| 6. | Naagan | Blinking of eyes |
| 7. | Koorman | Vision, lacrimation |
| 8. | Kirukaran | Nasal, oral secretion |
| 9. | Devathathan | Sleep, fatigue |
| 10. | Thananjayan | Edema, hyper acusis |

- In case of Valiazhal Keel Vayu

Abanan - Constipation
Viyanan - Pain and tenderness over the affected areas
Samanan - Affected due to other Vayus are affected
Devathathan - Insomnia are noted

## II. Azhal

This is nothing but the characteristic of fires such as burning, boiling and heating etc. It correspondes to the function of thermogenesis (production of heat) necessary to maintain the integrity of the human circulatory systems. Azhal is classified into 5 types. It mainly governs enzymes and hormones.

**Seats of Azhal**

- Between heart and the navel
- Sweat, lymph, blood, stomach, urinary bladder, saliva, eye and the skin.

**Varietis of Azhal**

| S.N | Name | Location | Function |
|---|---|---|---|
| 1. | Analam | Stomach, Small intestine | Dissolvent and digestive |
| 2. | Ranjagam | Liver, spleen, stomach | Colouring, pleasing, gratifying |
| 3. | Sathagam | Heart | Effective, efficient |
| 4. | Alosagam | Eyes | Seeing, consideration |
| 5. | Prasagam | Skin | Complexion of skin |

- In case of Valiazhal Keelvayu, it is noted that

Analapitham - Loss of appetite

Ranjagam - Aneamia

Sathagam - Unable to carryout regular works properly

Prasagam - Redness and hyper pigmentation

**III. Iyam**

It imparts moisture

**Seat of Iyam**

Above the heart, stomach, fat, sperm, tongue, uvula, bone marrow, blood, nose, nerves, bones, large intestine, eyes and joints.

**Varity of Iyam**

| S.N | Name | Location | Functions |
|---|---|---|---|
| 1. | Avalambagam | Heart | Supports all the other |
| 2. | Kilethagam | Stomach | Moistens and nourishes the food |
| 3. | Pothagam | Tongue | Takes care of perception |
| 4. | Tharpagam | Head | Gives satisfaction |
| 5. | Santhigam | Joints | Stability, lubrication and movements of joints |

- In case of Valiazhal Keelvayu, it is noted that

Kilethagam - Loss of appetite

Santhigam - Restricted movements

**Udal Kattugal**

**1. Saram (Chyle, Plasma)**

It is responsible for the growth and development. It keeps the individual in good spirit and nourishes the blood.

**2. Senneer (Blood)**

Blood imparts colour to the body and nourishes the muscle for the ability.

**3. Oon (Muscle)**

Gives shape to the body.

**4. Koluppu (Fat)**

It helps in lubricating the different organs and maintains the oily matter of the body.

**5. Enbu (Bone)**

Supports the system and is responsible for the posture and movements of the body.

**6. Moolai (Marrow)**

It fills the bone cavity, nourishes semen and imparts strength, endurance and shinny appearance.

**7. Sukkilam or Suronitham (Sperm and ovum)**

It is responsible for the reproduction.

**Relation between seven thathus and mukkutram**

| S.no. | Udal Kattugal | Governing Kutrams |
|---|---|---|
| 1. | Saaram | Iyam |
| 2. | Senneer | Azhal |
| 3. | Oon | Iyam |
| 4. | Kolupu | Iyam |
| 5. | Enbu | Vali |
| 6. | Moolai | Iyam |
| 7. | Sukkilam & Suronitham | Iyam |

- In valiazhal Keelvayu, it is noted that

| | | |
|---|---|---|
| Saaram | - | Easy fatigability, loss of appetite |
| Senneer | - | Anemia, raised ESR |
| Oon | - | Muscle wasting |
| Kolupu | - | Restricted movements |
| Enbu | - | Pain and swelling, bone erosion, deformity |
| Moolai | - | Soft tissue swelling in proximal inter phalangeal joints |

**Gnanendhriyam**

| | | |
|---|---|---|
| Mei | - | Feels all types of sensation |
| Vai | - | For identifying taste |
| Kan | - | Meant for vision |
| Mooku | - | For identifying smell |
| Sevi | - | For hearing |

- In case of Valiazhal Keelvayu, it is noted that

| | | |
|---|---|---|
| Mei | - | Pain and tenderness of joints |

**Kanmendhriyam**

| | | |
|---|---|---|
| Kai | - | Mejority normal works done by hands |
| Kal | - | For walking |
| Vai | - | For speaking |
| Eruvai | - | for defaecation |
| Karuvai | - | For reproduction |

- In case of Valiazhal Keelvayu, it is noted that

| | | |
|---|---|---|
| Kai, Kal | - | Difficult in using limbs |
| Eruvai | - | Constipation |

**Pinineekam (Treatment)**

Siddha system of medicine is a unique system of medicine in which the treatment is given both for the body and the mind.

Thiruvalluvar, in his Thirukkural, under the heading, 'Marundhu' mentions about the diet disease and its prevention. Eg.

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So in Siddha system, treatment is not only for the removal of the disease but for prevention and improving the body condition – Rejuvenation.

- Kaapu (Prevention)
- Neekkam (Treatment)
- Niraivu (Restoration)

**Kaapu**

Preventive aspect is very much stressed in all Siddha litrature. Body and mind should be clean and free of evil thoughts and deeds.

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**Neekam**

A good physician should know about the derangement of Kutram and should treat the patients on the basis of altered Kutram.

**Treatment is based on**

1. To bring the Thridosham to normal
2. To treat the disease according to its symptoms through medicines.
3. To increase the natural immunity.

**To Normalize Tridosham**

Vadha diseases can be brought down by the Viraesanam, by giving laxatives and purgatives, according to the patients' conditions.

**Management**

Valiazhal Keelvayu is one of the vadha diseases. So, according to the Siddha literature, vitiated Vadha may be suppressed by giving purgatives.

**For Purgation**

Vellai ennai - ½ to 1 ounce (14 to 18 ml) At Morning on empty stomach

After rearrangement of Dhosas

- ❖ Kumari Mathirai - 1 twice daily with jaggery (Internal)
- ❖ Nochi Thylam - 60 ml applied externally

As per the Text book of Siddha Maruthuvam,

Internal Medicine

Vanga Chunnam, Pavala Parpam- 65 ml with Cow Milk.

Vanga Chunnam, Muthu Parpam, Thanaga Parpam - 65 ml with Cow Milk.

External Medicine

Kukkil Vennai, Alarchi Vennai, Ulundu Thailam- Patti Kattatuthal

**Anupanam**

Anupanam or Thunai marundhu in Tamil is commonly translated as vehicle, adjuvant, adjunct, and supporting or co joint or concurrent drug therapy. In Siddha system of medicine, the adjuvant is one of the most important during therapy.

**Panai Vellam (** ○′

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Vadha Pitha Thondham, Kabha Thondham, Sanni Patham, Vadha Kunmam, Arojagam will cure.

**Pathiyam**

During the course of treatment, the patient is advised for the following diet and physical activities. This form of medical advice is termed as Pathiyam. It means both Pathiya Patharthas and Apathiya Pathrathas.

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The Pathiyams are

- Kadum Pathiyam
- Miga KadumPathiyam
- Ichcha Pathiyam
- Uppilla Pathiyam

In Theraiyar Venba,

**Diet**

In Patharthaguna Chinthamani

Chenkaluneer, Honey, Pepper, Sesame oil, Asafoetida, Thaluthalai, Caster oil, Black gram

## SIRAPPU MARUTHUVAM

Kayakalpam, Pranayamam, meditation, Yogasanam, and Thokkanam (Marthanam) are the special features of Sirappu Maruthuvam (Special Medicine) in Siddha.

### Thokkanam (Massage)

By applying the oil on the affected portion of the body and massaging the same is called Thokkanam (Marthanam).

**Types**

1. Thattal
2. Erukkal
3. Pidithal
4. Murukal
5. Kaikattal
6. Azhuthal
7. Izhuthal
8. Mazhathuthal
9. Asaithal

According to Patharthaguna Chinthamani,

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Vadha diseases are cured not only by internal medicine but also by Thokkanam.

Theraiyar also quoted this as

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In Valiazhal Keelvayu, Asaithal type of Thaokanam is used.

**Ottradam (Fermentation)**

Ottradam woth Nochi leaves are given to all patients to relieve pain and swelling in affected joints.

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**PRANAYAMA**

Pranayama means the breath control, which include the three stages as inhalation, suspension and exhalation.

**Method**

- ❖ Sit in a comfortable position (Padmasana or Sukhasana)
- ❖ Inhale through the left nostril, keeping the right one closed with the thump of the right hand.
- ❖ Hold the breadth by closing the left nostril with ring finger and the little finger of the right hand.
- ❖ Exhale through the right nostril slowly by removing the thumb.
- ❖ Then inhale through the right nostril, keeping the left one closed with the ring finger and the little finger of right hand.
- ❖ Hold the breath by closing the right nostril with the thumb of right hand.
- ❖ Exhale through the left nostril by removing the fingers kept in the left one.

This completes one round of the exercise. Repeat this four to five times.

**Benefits**

It increases the longevity, prevents and helps to cure the disease. Respiratory, circulatory and nervous systems are strengthened.

**MEDITATION**

Integration of the body, mind, will, consciousness, ego and the self.

**Method**

Sit in Padmasana or Sukhasana, and concentrate on a particular object or in action.

**Benefits**

- It purifies and enriches the blood, gives total relaxation.
- Serotonin secretion increases, which is a natural tranquilizer.
- Endorphins, encephalin secretion increase, which is a natural pain killer.
- During deep slow wave sleep, delta waves produced, the same thing happen in meditation, so we get refreshness within minutes.

**YOGASANAM**

Yoga is the science of right living and as such, is intended to be incorporated in daily life. It works on all aspects of the persons: the physical, vital, mental, emotional, psychic and spiritual. According to the scientist, Yoga therapy is successful because of the balance created in the

nervous and endocrine systems which directly influences all the other systems and organs of the body.

For Valiazhal Keelvayu,

- ❖ Pawan Muktasana – Part I Anti rheumatic group
- ❖ Sava Asana are advised.

**Pawnamuktasan (Dynamic Practices)**

Pawan means wind or Prana.

Mukta means release.

Asana means posture.

Stiffness of the body is due to the blocked Prana and accumulation of toxins. This group of Asanas releases the blocked Prana and the removal of toxins. They are concerned with the loosening of the joints of the body. So they are advised to the patients of Valiazhal Keelvayu, where vigorous physical exercises are not advised.

**Sava Asana**

Starting position:

Lie on the floor, face facing upward, Keep the legs straight and together, Hands should be placed close to the body, palms facing downward.

**Method**

Position 1

Splitting the legs slowly sideward and keeping them one or two feet apart.

Position 2

Moving the hands slowly sideward and keeping the arms as relaxed as possible, keeping the palms upward, with natural flexion at the finger.

Position 3:

Taking a deep breath and exhale deeply.

Position 4

Closing the eyes and keeping the mind on breathing.

Keep this position for about 60 to 120 seconds and relax throughout. Then slowly come back to the starting position by releasing the position one by one in the reverse order.

- ❖ Keep the mind on breathing for a few seconds
- ❖ Try to forget all external thoughts while in the final position.
- ❖ Try to relax the body and mind as much as possible

**Benefits**

- ➢ Gives a complete relaxation to the whole body.
- ➢ Gives the mental peace.
- ➢ It helps to cure many functional, organic, structural and psychological disorder
- ➢ It is useful to energize our body and mind for further action.

**Niraivu (Restoration)**

- ❖ Reassurance is given to all patience for speedy recovery.
- ❖ All of them are advised to live in a good morality
- ❖ Avoid excessive workload.
- ❖ Avoid exposure to cold.
- ❖ Avoid emotional stress at any cost.
- ❖ Advised to do Yogasanas.

# REVIEW OF LITERATURES

## MODERN ASPECTS

### RHEUMATOID ARTHRITIS

Rheumatoid Arthritis is a chronic, systemic, autoimmune disorder that causes the immune system to attack the joints causing inflammation. It can also cause inflammation of the tissue around the joints, as well as other organs in the body.

Autoimmune diseases are illness, which acquire when the body tissues are mistakenly attacked by its own immune system. The immune system is a complex organization of cells and antibodies designed normally to “seek and destroy”, invaders of the body, particularly infections. Patients with these diseases have antibodies in their blood, which target their own body tissues, where thay can be associated with inflammations.

### Definition

Rheumatoid arthritis is a symmetrical, destructive and deforming polyarthritis affecting small and large synovial joints with associated systemic disturbance a variety of extra articular features and the presence of circulating anti- globulin antibodies (Rheumatoid factors)

### Synovial Joints

To better understand the effects of Rheumatoid Arthritis on a joint, a brief review of a Synovial joint is essential.

**Components of Synovial Joints**

A joint capsule that isolates the joints from surrounding tissue.

A joint cavity formed by the surrounding joint capsule.

A Synovial membrane (Synovium) the inner lining of the joint capsule.

Synovium fluid that is secreted by the Synovium and serves as a lubricant and carries nutrients for the joint.

Bones that come together to form the joint

Hyaline (Articular) Cartilage covers and protects the ends of the bones that participate in the joints.

There may be other structures present in or near the joint such as discs, Cartilage (menisci), tensions, and ligaments.

**Important characteristic of these structures includes**

1. The joint capsule is composed of two layers, an outer fibrous layer and the inner synovium. The outer layer has many joint receptors innervating it, but is not well vascularized. The opposite is true with the Synovium; it is well vascularized but poorly innervated.

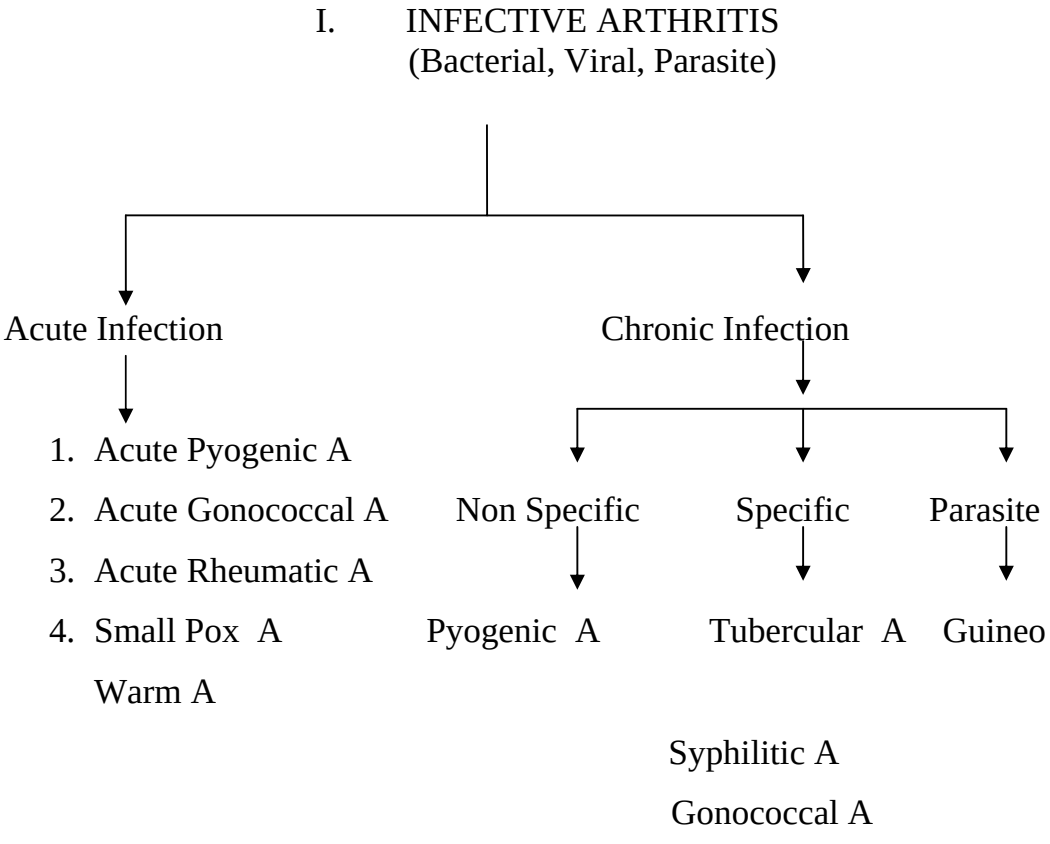
2. The articular cartilage has two important functions including the ability to minimize frictions and wear between two opposing joints surfaces during movements and to dissipate forces on the joint over a wider area. Thus decreasing stresses on the contacting joint surfaces.

3. Synovial fluid contains hyal urinate and a glycoprotein called lubricin, both are responsible for the lubrication of the joint, although they are specific for certain components, hyaluronic acid is important for the lubrication of the joint capsule while lubricin is necessary for the cartilage on cartilage lubrication.

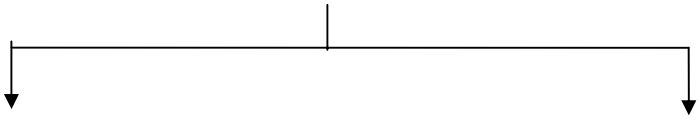
4. Synovial fluid is also the medium by which nutrients are carried to, and wastes are carried from the vascular components of the joints.

5. The ends of the long bones that form the synovial joints are composed of a soft, spongy type of bone called subchondral bone it, except for the very ends of the bone long bones are usually very strong.

**Classification of the joint disease**



**II. RHEUMATOID ARTHIRITIS**



Rheumatoid Arthiritis

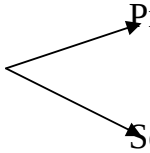
Arthropathy

RA (Adult)
Juvenile RA (Childhood)

Sero Negative Spondyle

Ankylosing Spondylitis
Reiter's Disease
Psoriatic A

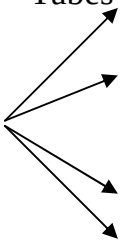
III. DEGENERATIVE ARTHIRITIS



Primary Osteo Artiritis

Secondary Osteo Artiritis

IV. NEUROPATHIC ARTHROPATHY



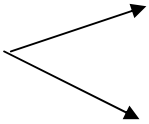
Tabes-Charcot's Arthropathy

Syringo Myelia

Leprosy

Diabetes Mellitus

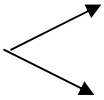
V. METABOLIC ARTHIRITIS



Alkaptonurine A

Gout

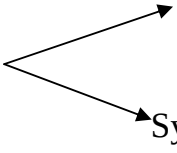
VI. ARTHRITIS IN SYSTEMIC DISORDER



Allergic A

Hemophilic A

VII. MISCELLANEOUS JOINTS



Villonodular Synovitis

Synovial Chondromatosis

VII. HISTORICAL JOINT

## HISTORY

The name is based on the term “rheumatic fever” an illness which includes the joint pain and is derived from the Greek word “Rheumatos” (Flowing). The suffix “oid” (Resembling) gives the translation as joint inflammation that resembles the Rheumatic fever. The first recognished discription of rheumatoid arthritis was in 1800 by the French Physician Dr. Augustin Jacob Landre-Beaubais (1772-1840), who was based in the famed Salpetriere Hospital in Paris. The name Rheumatoid Arthritis itself was coined in 1859, by British Rheumatologist, Dr. Alfred Baring Garrod.

## EPIDEMIOLOGY

- Occurs in approximately one percentage of the population.
- Is two to three times more prevalent among women than men.
- Most commonly develops in the third to fifth decade of life. Approximately 80% of total cases occur between the ages of 35 and 50.The prevalence and the incidence increase with age and peaks at about age 70.
- Some Native American groups have higher prevalence rates (5 to 6%), Black persons from the Caribbean have lower prevalence rates.
- Shortens the life spans by 3 to 10 years.

Global burden of disease 2000 study published in the World Health Report 2002, Rheumatoid Arthritis is the 31$^{st}$ leading cause of years lived

with disability (YLDs) at global level accounting for 0.8% of total global YLDs.

**AETIOLOGY**

- **Genetics:** The cause of Rheumatoid Arthritis is still unknown. Some scientists believe that the tendency to develop Rheumatoid Arthritis may be genetically inherited. Rheumatoid Arthritis tends to run in families. And frequency of disease is increased in first-degree relatives of patients with Rhematoid Arthritis. Up to 50% of the genetic contribution to susceptibility is due to genes in the HLA region. HLA-DR4 is the major susceptibility haplotype (most specifically DR0401 & 0404), is more important in Indians. Concordance rates are higher in monozygotic twins (12-15%) than in dizygotic twins (3%)

- **Immune system:** People with Rheumatoid Arthritis have an abnormal immune system response that mistakes the body's healthy tissue for a foreign invasion and attacks it. This miscommunication in body is known as Rheumatoid Arthritic factor. About 80 of the R.A. patients have circulating antibody known as Rheumatoid factor which is immunoglobin M produced against the Fc portion of IgG. Rarely it may be IgG, IgA of IgE type. It forms immune complex, which produces inflammation.

- **Gender:** Female gender is a risk factor. It goes into remission on pregnant and this is increased in post partum and by breast-feeding.

- **Infection:** Rheumatoid Arthritis is triggered by kind of infection. Isoloation of variety of organisms from the synovial tissue, synovial fluid blood of the affected persons, supports this possibility. It includes Diptheroid Bacilli, Chlamydia Pneumoniae, Mycoplasma,

Erysipelothrix, Rubella, Parovirus, human herpes virus 6 and Viruses especially Ebstein Barr Virus

- **Environment factors:** Smoking and obesity are also risk factors for Rheumatoid Arthritis.

- **Trauma :** Traumatic incidence is a precipitating cause for the development of R.A.

- **Psycological stress:** It also plays a role. The study of identical twins in one of whom Rheumatoid Arthritis, developed tends to support this concept.

- **Vascular Changes:** Alteration of peripheral vascular bed with autonomic influence causes the symmetrical pattern of arthritis.

- **Neurogenic factor :** Neuropeptide Rheumatoid Arthritis peptide can cause inflammation. These peptides which are from sympathetic fibers of spinal cord are responsible for the inflammation. This is confirmed by the incidence of severity of Rheumatoid Arthritis in the nonparalysed side of the hemeplegic patients.

## PATHOGENESIS

There is a genetic predisposition of RA and that the joint inflammation is immunologically mediated; however, the initating agent(s) and the precise interplay between genetic and environmental factors remain to be clarified.

In all likelihood the disease is initiated by activation of helper T cells responding to some arthritogenic agent (MICROBE). Activated CD4+ cells produce a number of cytokines that have two principle effects: (1) activation of macrophages and other cells in the joint space, which release tissue destructive enzymes and other factors that perpetuate inflammation, and (2) activation of the B-cell system, resulting in the production of anti-bodies, some reactions damage the joints and are believed to play an important role in disease progression. In the context of this general scheme the role of genetic factors, T cells, cytokines, B cells, and infectious agents are as follows:

## IMMUNOGENESIS

The role of immune processes in the development of the rheumatoid lesions is indicated by a number of observations of patients with the disease:

- The presence of gamma globulins (in particular, IgG and IgM) in synovial fluid and leukocytes, in synovial plasma cells, lymphoid centers, and lining cells and in subcutaneous nodules and vessel walls. These gamma globulins are not a direct cause of rheumatoid disease, since the disease occurs in persons with agammaglobulinemia.

- ❖ The presence of RF in synovial plasma cells and in syovial lining cells, which are capable of synthesizing RF.

- ❖ The presence of synovial leukocytes, interstitial connective tissue, and lining cells of complement components associated with decreased complement titers in the synovial fluid.

- ❖ The presence of IgG, IgM and B1c complement in the articular cartilage of patients with first or second degree osteoarthrosis.

- ❖ The presence of antinuclear factor (ANF) in the serum of patients with advanced disease; this suggests a role of autoimmunity, if not as the primary cause then perhaps owing to the chronicity of rheumatoid arthritis.

The common association of rheumatoid arthritis with amyloidosis.

**HISTOGENESIS**

On the basis of available histologic and immumologic data, a concept of the histogenesis of rheumatoid arthritis has evolved. An antigen, which could be extraneous (related to infection) or endogenous (related to abnormal gamma globulins), gains access to the joint cavity and elicit an immune reaction that is both humoral and cell mediated and in which polymorphonuclear leukocytes, T and B lymphocytes, and macrophages interact.

Complexes of various immunoglobulins, RF, and complement-some quite large and insoluble are formed and phagocytosed by cells termed RA cells or phagocytes. Thus the inflammatory process is set in motion, terminating in the formation of granulation tissue and scarring.

Lysosomal enzymes from the cells of the exudates and from the pannus participate in the destruction of cartilaginous matrix by degrading both proteoglycans and collagen. They thus play a major role in the deterioration of the joint.

**PATHOLOGY**

The Pathological changes proceed in three stages and are Synovitis, destruction and deformity. The attack of a joint by the disease usually begins with the synovium. Early in the disease, edema begins to be seen in cells in the synovium and multiplications of synovial lining cells occur. As the disease progresses, the synovium may grow considerably larger eventually forming tissue called pannus. Pannus can be considerably the most destructive element affecting joints in the patient with rheumatoid arthritis. Pannus can attack articular cartilage and destroy it. Further the pannus can destroy the soft subchondral bone once the protective articular cartilage is gone. The synovial fluid secreted by the synovium is thought to be avascular articular cartilage. In this disease process, an interaction between antibodies and antigen occurs and causes alteration in the composition of the synovial fluid. Ultimately, digestants are formed in the fluid, which attack the surrounding tissue. Once the composition of the fluid is altered, it is less able to perform the normal function noted above, and more likely to become destructive. The changes in the syovium and synovial fluid briefly described above are responsible for a large amount of joint and soft tissue destruction. The destruction of bone eventually leads to laxity in tendons and ligaments. Under the strain of daily activities and other forces, these alterations in bone and joint structure result in the deformities frequently seen in patients with rheumatoid arthritis. Considerable destruction of the joint can occur with pannus invading the subchondral bone.

Bone destruction occurs at areas where the hyaline cartilage and the synovial lininig do not adequately cover the bone. If the disease progresses to a more advanced stage, the articular cartilage may lose its structural and density resulting in an inability to withstand the normal forces placed on the joint. In these advanced cases, muscle activity causes the involved ends of the bones to be compressed together causing further bone destruction. Further, the disease can irreversibly change the structure and function of a joint to the degree that other degenerative changes may occur, especially in the weight bearing joints of the body.

Thus, joint destruction can progress to the degree that joint motion is significantly limited and joints can become markedly unstable.

| **Pathological process** | **Tissues involved** | **Results in** | **Deformities** |
|---|---|---|---|
| Vasculitis<br>Necrosis<br>Fibrosis | Joint structures | Synovitis effusion<br>articular cartilage destruction. pericapsulitis<br>Ligamentous instability | Swelling<br>Stiffness<br>Instability-subluxation dislocation<br>Instrinsic plus deformity |
| Plasma cell Proliferation | Tendon | Tenosynovitis Rupture | Ulnar devation of fingers<br>Concertina collapse of fingers |
| Granulation tissue and pannus formation | Muscle | Wasting atrophy fibrosis | Contracture ankylosis |
| Synovial hypertrophy in joint and tendon | Bone<br><br><br><br>Subcutaneous | Osteoporosis-Thinning of cortex and loss of trabecular structure. cyst formation subchondral erosions(adjacent to metaphysis) destruction<br>Nodules | |

## CLINICAL FEATURES

The symptoms of Rheumatoid Arthritis depending on the degree of tissue inflammation, remission can occurs spontaneously and patients feel well when relapse, symptoms return (Flare).

### General Symptoms

- Malaise
- Fever
- Fatigue
- Loss of appetite
- Weight loss
- Myalgias
- Weakness or loss of energy

### Joints Symptoms

- Pain
- Swelling
- Morning Stiffness
- Inflammation
- Nodules
- Deformity

### Pain

The pain in Rheumatoid Arthritis has several sources. Pain can come from inflammation of the joint and surrounding tissues or from working the joints too hard.

### Swelling

The area around the affected joint is swollen and puffy.

### Morning Stiffness

Morning Stiffness is a very characteristic of Rheumatoid Arthiritis, which is lost for one hour and above. Stiffness is most noticeable in the morning and improves latter in the day.

**Inflammation**

Redness, tenderness and warmth are the hallmarks of inflammation.

**Nodules**

These are hard bumps that appear on or near the joint. They often are found near the elbows.

**Deformity**

Occurred from several mechanisms, all related to Synovitis and the patients attempt to avoid the pain by keeping the joints in the least painful position.

## Patterns of onset of Rheumatoid Arthritis

| | | | | | |
|---|---|---|---|---|---|
| Insidious | - | 70% | Acute | - | 15% |
| Oligoarticular | - | 44% | Systemic | - | 10% |
| Polyarticular | - | 35% | Palindromic | - | 5% |
| Monoarticular | - | 21% | | | |

**CLINICAL MANIFESTATIONS**

**I. Articular Manifetation**

Rheumatoid Arthiritis is a chronic Inflamatory Arthiritis; symptoms must have been present for atleast six weeks, in order to make the diagnosis. It mainly affects the joints of the Knuckles (Metacorpophalangeal) and the proximal inter Phalange joints of the

hands. It also affects the joints of the feet- metatarsophalangeal joints. The wrist, elbow, knees, ankles are also frequently affected. The vertebrae of the neck are sometimes involved in the people who have had the disease many years.

**Hands and Wrist**

Rheumatoid arthritis often causes symmetric arthritis which characteristic involvement of certain specific joints such as proximal interphalangeal joints and metacarpophalangeal joints. The distal inter-phalangeal joints are rarely involved.

In early course of the disease, there may be spindling of the progress due to synovial hypertrophy and effusion in the interphalangeal joints.

Later, marked with synovial hypertrophy on the dorsum of the wrist, with the involvement of extensor tendon sheath, results in dropped finger. The same process in the palmar aspect may lead to carpal tunnel syndrome. Tenosynovities of long flexor tendons in palm may result in stiffness of the fingers and cause trigger finger.

**Piano Key Sign**

Weakening of the distal radio ulnar ligament by synovitis allow the distal ulnar to migrate dorsally so that it over rides the radius (Caput ulnae syndrome). The Ulnae can be depressed by pressure, like a piano key.

**Carpal Colapse and Fusion**

It may occur in late, when the instability of the wrist may lead to collapse of the carpal bones causing for shortening of the carpus and ultimately spontaneous fusion of the wrist. The eventual functional loss characterized by the inability to make a fist and pinch thin objects, weakened grip strength.

Persisting synovitis, weakening of the capsule, muscle wasting, tendon rupture and destruction of the articular surface leads to characteristic Rheumatoid hand deformity, which includes:

- **"Swan neck deformity"** with hyperextension of the proximal interphalangeal joints with fixed flexion of the distal interphalangeal joints.
- **"Button hole deformity"** (Boutoniere deformity) which includes fixed flexion of the proximal interphalangeal joints and extension of the distal interphalangeal joints.
- The **"Z deformity"** of the thumb (Radial deviation at the wrist with ulnar deviation of the digits often with palmar subluxation of the proximal interphalangeal joints).
- **"Intrinsic Plus Deformity"** Hyper extension of the first interphalangeal joints and flexion of the first metacarpophalangeal joint with consequent loss of thumb mobility and pinch.
- **"Bull horn deformity"** due to rupture of the extensor communis tendon from synovitis near the ulnar styloid.

Palmar erythema is also common. Raynaud's phenomenon may occur in the early stage.

**Feet and Ankles**

Active synovitis in the metatarsophalangeal joint can produce pain and tenderness best elicited by the lateral squeezing of the joints.

The synovial swelling of the active disease together with destruction of the ligament between the metatarsal heads may broaden the forefoot and separate the toes to produce the "day light sign".

Deformities may also develop in the feet including eversion at the hind foot (subtalar joint), plantar subluxation of the metatarsal heads, widening of the forefoot, hallux-valgus and lateral deviation and dorsal subluxation of the toes. So the patient walks on the unprotected heads of the metatarsal bones. The patient complains of a feeling of walking on pebbles and the metatarsal heads are readily palpable on the sole of the foot.

In the hind foot calcaneal erosions, hallux-valgus deformities are found.

Rheumatoid synovitis may develop in the subtaloid and midtarsal joints. Chronic arthritis in this region can lead to "pesplano-valgus deformity".

**Foot Deformities in Rheumatoid Arthritis**

- ❖ Callosity under PIP joint
- ❖ Plantar callosity

- Atrophy of plantar metatarsal fat pad
- Prominent metastarsel head
- Excessive plantar tilt of metarsals
- Claw toes
- Hammer toes
- Rheumatoid nodules
- Calcaneal erosions
- Achilles tendinitis
- Flattening of longitudinal arch.
- Bunion
- Hallux valgus
- Overriding of second and third toes
- Splaying of forefoot due to divergent metarsals.

**Knee Joints**

Knee joint is commonly involved with synovial hypertrophy, chronic effusion, and frequently ligmentous laxity. Pain and swelling behind the knee may be caused by extension of inflammed into the popliteal space (Baker's cyst).

Wasting of quadriceps is present, Flexion contractures may develop.

Both cruciate and lateral ligaments may be destroyed, resulting in gross joint instability and valgus deformity or varus deformity.

**Elbow and Shoulder Joints**

Inflammed olecranon bursae and Rheumatoid nodules around the elbow are common but true rheumatoid arthritis affecting the elbows is less common. Severe destructive changes can occur leading to "fixed flexion deformity".

Pain in the shoulder can be referred from the neck or be due to involvement of acromio-clavicular joint, sub-acromial bursa, rotator cuff and bicipital tendon as well as the gleno-humeral joint.

**Cervical spine**

The upper cervical discs are frequently involved. The cervical vertebrae may become subluxed and this may cause serious neurological disorders.

The atlantoaxial articulations and their associated ligaments are frequently involved. Separation between the odontoid process and the first cervical vertebra exceeds the normal of 2 to 3 mm that can be detected by X-ray. They complain pain in the cervical spine that radiates upwards over the occiput and vertex to the forehead.

Atlantoaxial dislocation may cause the vertebrobasilar insufficiency or may produce neurological signs by direct pressure on the cord.

**Hip joints**

The hip is less commonly involved but when it occurs, it causes serious disability. Occasionally the disease remains monoarticular for several years but eventually other sites are affected. Persistent synovitis in a weight-bearing joint soon leads to the destruction of the cartilage and bone. The acetabulam is eroded and eventually the femoral head may get perforated at its floor. The hallmark of the disease is progressive bone destruction on both sides of the joints without any reactive osteophyte formation. This is often referred to as “aseptic necrosis” and is more common in corticosteroid treated patients.

**Other joints**

Rheumatoid arthritis affects all the synovial joints. Temporo mandibular involvement produces pain on chewing. Acromio clavicular, sterno clavicular and cricoartenoid joints may also be involved.

**II. Extra – Articular Manifestations**

| | |
|---|---|
| Systemic<br>• Fever<br>• Weight loss<br>• Fatigue<br>• Susceptibility of infection | Vasculitis<br>• Digital arteritis<br>• Ulcers<br>• Pyoderma gangreosum<br>• Mononeuritis multiplex<br>• Visceral arteritis |
| Musculoskeletel<br>• Muscle Wasting<br>• Tenosynovitis<br>• Bursitis<br>• Osteoporosis | Cardiac<br>• Pericarditis<br>• Myocarditis<br>• Endocarditis<br>• Conduction defects<br>• Coronary vasculitis<br>• Granaulomatous aortitis |
| Haematological:<br>• Anaemia<br>• Thrombocytosis<br>• Eosinophilia | |
| Lymphatic<br>• Spleenomegaly<br>• Felty's syndrome | Pulmonary<br>• Nodules<br>• pleural effusion<br>• Fibrosing alveolitis<br>• Bronchiolitis<br>• Caplan's syndrome |
| Nodules<br>• Sinuses<br>• Fistula<br>Occular<br>• Episcleritis<br>• Scleritis<br>• Scleromalacia<br>• Kerato conjunctivitis sicca. | Neurological:<br>• Cervical Cord compression<br>• Compression neuropathies<br>• Peripheral neuropathy<br>• Mononeuritis multiplex<br>• Amyloidosis |

## DIAGNOSIS

The typical picture of bilateral symmetric inflammatory polyarthritis involving small and large joints in both upper and lower extremities with sparing of the axial skeleton except the cervical spine suggest the diagnosis.

Consititutional features like morning stiffness, demonstration of subcutaneous nodules, presence of the rheumatoid factor and radiographic findings of juxta articular bones substantiate the diagnosis.

**Criteria for the diagnosis of Rheumatoid Arthritis:**

a. Morning stiffness I hr,

b. Arthritis of 3 or more joint areas.

c. Arthritis of hand Joints.

d. Symmetric Arthritis.

e. Rheumatoid Nodules.

f. Rheumatoid factor.

g. Radiological changes.

Diagnosis of Rheumatoid Arthritis is made with 4 or more criteria. Criteria'a to d' must be present for atleast 6 weeks, and Criteria 'b to e' must be observed by a physician.

**Grading of Rheumatoid Arthritis Patients Tenderness**

Grade 1 The patient says the joint is tender.

Grade 2 The patient winces.

Grade 3 The patient winces and withdraws the affected part.

Grade 4 This patient will not allow the joint to be touched.

**Restriction of Motion**

Grade 1 No restriction of ability to perform normal activities.

Grade 2 Moderate restriction but with an ability to perform most activities of daily activity.

Grade 3 Marked restriction with an ability to perform most activities of daily activity.

Grade 4 Incapacitation with confinement to bed or wheel chair.

**INVESTIGATIONS**

**I . Haematological**

- ❖ Full Blood Count- Anaemia, Esinophilia, Thrombocytosis
- ❖ ESR – Increased in active stage
- ❖ Serum proteins – Hyperglobulinaemia with elevation of Gamma and Alpha 2 globulins hypoalbuminaemia during acute phase.

**II. Immunological**

**I. Rheumatoid Factor**

Rheumatoid Factor is an immunoglobulin M (Ig M) antibody directed against normal human immunoglobulin. It is usually measured by agglutination tests. (Ig G) (Agglutination of Ig G coated latex

particles) and reported as either negative or positive with titers up to 1:320.

- Rose Waaler Test: A special type of passive haemagglutination test is Rose Waaler test. In Rheumatoid Arthritis autoantibodies appears in the Serum, which acts as an antibody to gamma globulin. The Rheumatoid Arthritis factor is able to agglutinate red ells coated with globulin. The antigen used for the test is suspension of sheep erythrocytes sensitized with subagglutinating dose of rabbit anti sheep erythrocyte antibody. (Amboceter)

- Latex agglutination test (Latex fixation test)

- Differential agglutination test (DAT)

- Human erythrocyte agglutination test (HEAT)

**2. Anti Nuclear Antibodies**

Routine determination of the resence of antinuclear antibodies is best performed by the indirect immuno fluorescent technique.

**3. C-Realtive Protien**

CRP is produced in the liver and is normally found in Serum in minute amounts (less than 0.6 mg/dl). In conditions characterized by inflammation with tissue destruction, the CRP level may increase. Although CRP has many effects in the immune system, its specific primary role is still unclear.

## III. Special Investigations

### 1. Synovial fluid analysis

Confirms the presence of inflammatory Arthritis. Fluid may show positive Roose-Waaler test in joint fluid, before it can be detected in blood. Also it may show neutrophils or monocytes inclusion bodies.

### 2. Synovial biopsy

Villus formation with thickening of synovial layer and infiltration with abnormal cells.

## IV. Radiographic Evaluation

- ❖ Soft tissue swelling
- ❖ Juxta articular osteoporosis
- ❖ Erosion of joint margins
- ❖ Joint spaces are decreased
- ❖ Deformities
- ❖ Atlantoaxial subluxation
- ❖ Subchondralerosions and cyst formation
- ❖ Fibrous and bony ankylosis develops in the late stages.

**V. Arthroscopy**

In acute Rheumatoid Arthritis synovium is oedematous, diffusely erythematous and friable. In more chronic conditions it becomes thickened.

**VI. Renal biopsy**

Indicated in cases of reduced tubular or glomerular functions.

**VII. Pulmonary biopsy**

Used to distinguish Rheumatoid nodules from carcinoma or to establish diagnosis of fibrosing alveolitis.

**VIII. Ultra Sound**

**IX. Scintigraphy**

**X. CT Scanning**

Shows cartilage and sub –chondral bone damage long before conventional X rays

**XI. MRI**

**XII. Urine Analysis**

**XIII. Biochemical Analysis**

**XIV. Anti CCP Antibodies (Cyclic Citrullinated Peptide Antibodies)**

It is positive in 80% of all Rheumatoid Arthiritis cases, but it is rarely positive if Rheumatoid Arthiritis is not present, giving it a specificity of around 98%. It can be detected in early stages of the disease, even before the on set of clinical disease.

**XV. Genetic tests**

$HLADRB_1$ Typing to detect the presence of 'shared epitope'.

**XVI. Antinuclear Antibody Assay (ANA)**

**XVII. Bone Densitometery (DEXA)**

Bone Density Test to Check For Bone Loss.

**Differential Diagnosis of Rheumatoid Arthritis**

Sero negative spondyloarthropathy included following rheumatoid like conditions were the serum is negative for rheumatoid factor. They are.

**1. Ankylosing Spondylitis**

Ankylosing spondylitis is a chronic, progressive and crippling disease affecting the spine associated with calcification and ossification of ligaments and capsules of joints resulting in complete bony ankylosis. The exact etiology is unclear. Ankylosing spondylitis has been found to be more prevalent in certain races and hence shows a genetic predisposition. It is related to certain tissue types of the human leukocytic

antigen (HLA) system. The majority of ankylosing spondylitis patient is found to belong to HLA-B27 groups.

The disease occurs in the 3rd and 4th decades of life and is more common in males. The patients present with complaints of diffuse pain in the back and vague pain in other joints.

**2. Reiter's disease**

Reiter's disease characterized by triad of polyarthritis, urethritis, conjunctivitis. The joint condition is an acute polyarthritis resembling rheumatoid arthritis. It does not cause destructive changes in the joint structures. The urethritis is non-gonococcal but the exact organism is not known.

**3. Psoriatic Arthritis**

Psoriatic arthritis is a polyarthritis seen in about 10% of patients with psoriasis.

- The most common type is the one involving the distal interphalangeal joints of the hands and feet with psoriatic nail joints. Metacarpophalangeal joints are never involved in psoriatic arthritis.
- Arthritis multilens is a severe form where there is marked destruction of joints.
- Symmetrical polyarthritic type
- Oligo arthritic type.
- Spondyloarthritic type.

## 4. Enteropathic Arthritis

Chronic inflammatory bowel diseases like regional enteritis (Crohn's) disease) and ulcerative colitis are associated with arthritic lesion in abour 10% of the cases. There is peripheral (or) involvement of the spine. The Joint condition shown remissions and exacerbations along with activity of the underlying bowel disease.

## 5. Sjogren's Syndrome

Sjogren's syndrome is an immunologic disorder characterized by progressive destruction of the exocrine glands leading to mucosal and conjuctival dryness (Sicca syndrome) accompanied by a variety of autoimmune phenomena. Glandular, when the clinical manifestations are within the exocrine system and extra glandular, when other tissues are involved as well.

The disease predominately affects woman in the third of fourth decades of life.

Clinical Manifestations:

i. Keratoconjuctivitis and Xerostomia

ii. Renal involvement produces mild interstitial nephritis that may result in renal tubular acidosis.

iii. Sensory polyneuropathy and mononeuritis multiplex.

iv. Pulmonary involvement generally takes the form of an interstitial pneumonitis which is usually a little clinical significance.

# COMPLICATIONS

## Septic Arthritis

It may complicate Rheumatoid Arthritis, particularly in patients with long-standing nodular sero-positive disease. In debilitated patients, fever and leucocytosis may be absent and the signs of infection limited to malaise and slight exacerbation of inflammation in one or more joints.

## Amyloidosis

It is a complication of prolonged active disease and is formed in 25% to 35% of patients at autopsy, making Reumatoid Arthiritis, a leading cause of secondary amyloidosis.

## Fixed Deformities

The perils often the common place ones resulting from ignorance and neglects. Early assessment and planning should prevent postural deformities that will result in joint contractures.

## Muscle Weakness

Even mild degree of myopathy or neuropathy when combined with prolonged inactivity may lead to profound muscle wasting and weakness. This should be prevented by physiotheraphy and pain control if possible. If not the surgeon must be forewarned of the difficulty of postoperative rehabilitation.

**Joint Rupture**

Occasionally the joint lining ruptures and synovial contents spill into the soft tissue. Treatment is directed at the underlying synovitis i.e splintage and injection of the joint synovectomy as a second resort.

**Spinal Cord Compression**

It is a rare complication of cervical spine instability. By the onset of weakness Upper Motor Neuron (UMN) signs in the lower limb is suspicious. If they occur, immobilization of the neck is essential and spinal fusion should be carried out as soon as possible.

**Systemic Vasculitis**

This is a rare but potentially serious complication. High doses of corticosteroids and Intra Venous (I.V) plasma volume expanders may be called for.

**Clinical Course and Prognosis**

The course of Rheumatoid Arthritis is variable and difficult to predict in an individual patient. Most patients experience persistent but fluctuating disease activity accompanied by a variable degree of joint deformity.

Approximately 15% of patients of R.A. have a short-lived inflammatory process that remits without major deformities.

- Factors suggest poor prognosis:
- Insidious onset

- ❖ Unremitting disease
- ❖ Presence of Rheumatoid nodules
- ❖ Systemic involvement with increased ESR Anaemia
- ❖ Presence of RA factor, $HLADR_4$

**Juvenile Rheumatoid Arthritis**

Juvenile Rheumatoid Arthritis (J.R.A) is one of the more common connective tissue diseases of children and is a major cause of functional disability in this age group. By definition, it begins before the age of 16 and most patients are diagnosed early childhood. There is 2:1 female predominance except in the subgroup that has a systemic onset, in which the sexes are equally affected. J.R.A differs from R.A. in adults. In that

- ❖ Oligo arthritis is more common.
- ❖ Systemic onset is more frequent.
- ❖ Larger joints are affected more than smaller joints.
- ❖ Rheumatoid nodules and rheumatoid factor are usually absent and
- ❖ Antinuclear antibody seropositivity is common.

Genetic susceptibility, abnormal immuno regulation, cytokine, production and viral infection may all play a role in the pathogenesis. The morphology of the joint, pathology, including marked synovitis is similar to the alteration in adult R.A. The development of symptoms, such as fatigue, joint stiffness and limited range of motion is generally slow and gradual. Commonly targeted joint in all forms of the disease are

the knees, wrists, elbows and ankles. They become warm and swollen and are often involved symmetrically, Pericaridtis, myocaridtis, pulmonary fibrosis, glomerulonephritis, uveitis and growth retardation are potential extra-articular manifestations. A systemic onset may begin rather abruptly, associated with high spiking fevers, migratory and transient skin rash, hepatomegaly, spleenomegaly and serositis. Satisfactory recovery occurs in 70 to 90% of patient and in only 10% severe joint deformities present.

**Management**

Current concepts, regarding the management of Rheumatoid Arthiritis emphasize medical tharaphy, physical and occupational theraphy and patients' education. The aim of treatment is to

- Relieve pain
- Keep the inflammatory process down to minimum.
- Preserve joint movement
- Maintain the tone of muscles
- Prevent deformitives and stiffness of joints

Calcium and vitamin D have been proven to be beneficial in the treatment of osteoporosis (low bone density). Omega-3 fatiasis have been found to have antiinflamatory properties at high doses, present in Salmon fish. Vitamin C and haematinics in diets essential.

**Surgery**

The role of surgery is mainly reconstructive or rehabilitative. The following procedures are used, in the management of Rheumatoid Arthritis.

1. Synovectomy
2. Capsulotomy
3. Osteotomy
4. Arthrodesis
5. Arthroplasty-Excision and Replacement.

**Adjunctive Treatments**

**Rehabilitation**

Restoration of a disabled individual to perform function to a normal or near normal manner is called Rehabilitation.

Rheumatoid Arthritis is a crippling disease. Hence the Rheumatoid Arthritis patients require rehabilitative measures that include physical therapy, and special splints and appliances to help them and manage their own self care activities like dressing and eating.

**Physical Therapy (Physiotherapy)**

Physiotherapy is the application of physical agents and principles to pathological conditions for the purpose of producing therapeutic effects.

**Physiotherapy includes**

- ❖ Active exercise
- ❖ Passive joint movements
- ❖ Local heat
- ❖ Massage
- ❖ Electrical stimulation of muscles
- ❖ Ultra sound therapy
- ❖ Light therapy, ultraviolet rays and infrared rays.

**Exercise Therapy**

Once inflammation is satisfactorily controlled, appropriate and regular exercises is essential to strengthen muscles weakened by disease. Rheumatoid arthritis often makes joints stiff and restricts their motion if they are not used regularly. Exercises are designed to meet the needs of each patient and should be monitored by professionals specializing in physical medicine.

**Exercise Guidelines**

- The patient is advised to engage in low – impact exercises like stationary cycling, rowing and water aerobics and,
- Start with low intensity exercise.
- During periods of inflammation or pain (for rheumatoid arthritis), reduce exercise intensity and duration.
- Patient need longer than normal (longer than ten minutes) warm ups and cool downs.
- Modify patients exercise intensity or duration depending on how the patient feel that day.
- It is important that patient should move his joints through a full range of motion at least once a day, otherwise, joints will become stiff.
- If the patient experience pain two hours after exercise, he need to adjust the intensity or the duration of the exercise.

- ❖ The patients should do exercise to the point in he can (unless he has hypertension) because these type of exercises put the least amount of stress on the joints.

- ❖ Patient should use isometric exercises when he can (unless he has hypertension) because these types of exercises put the least amount of stress on his joints.

- ❖ Advise the patient to consult the doctor if he experience severe pain after exercise.

**Active Exercise is given to**

Mobilize joints, strengthening muscles, Improve co-ordination or balance.

**Passive Joint Movements**

The chief use of passive joint movement is to preserve full mobility when the patient is unable to move the joint actively.

**Types of Exercises**

Range – of – motion Exercise, Strengthening Exercise, Limbering up Exercise:

**1. Range – of – Motion Exercises / Stretching Exercises**

Stretching exercise involve moving a joint as it will comfortably go through its full range of motion or stretch. This exercise helps to maintain normal joint movement or restore movement that has been lost.

**Clinical Assessment of Joint Motion**

The most widely used and recommended instrument is the universal Goniometer, sometimes called an Arthrometer. Basically, it is protractor, to the center of which two long slender arms or levers are attached. Usually only one of the arms is movable, but may variations in design are possible.

**2. Strengthening Exercise**

Strengthening exercises help to maintain or increase the strength and power of the muscles.

**3. Limbering up Exercises**

Help to reduce morning stiffness or stiffness after staying in one position too long by doing the Range – of – motion exercises each day only a few times of loosen up.

**Details of Range – of – Motion Exercises**

**Upper Extremities – Shoulder**

- ❖ Arms at side with elbow straight, bring arms forward upward by year.
- ❖ Arms at side with elbow straight, take arms sideward upward.
- ❖ Arms at side bend elbows to right angle and take hands apart.

**Elbow**

- ❖ Bend elbow, touching fingers to top of shoulder.
- ❖ Straighten elbow.

**Fore Arm**

- ❖ Elbows bent, turn palm of the hand and then back of the hand towards face.

**Wrist**

- ❖ Keeping forearm steady, move the wrist up and down as in waving.
- ❖ Again hold forearm steady, mover the wrist up and down as in hand shaking.
- ❖ Make circle with hands.

**Hand and Fingers**

- ❖ Make tight first.
- ❖ Open fingers as wide as possible.
- ❖ With the hand open spread fingers away from each other and then together.
- ❖ Touch tip of the thumb to the tip of each finger.
- ❖ Bend the thumb in toward palm of the hand.

**Lower Extremities**

**Knee**

Sit with your feet off the floor. Lift the leg and then allow it to return of the bent position slowly.

**Ankle**

- Pull foot up and in, and then push back down.
- Make circle with foot.
- Pull foot in toward other foot.
- Pull foot to outside.

**Toes**

- Pull up on toes then curl toes under.

**Exercises for the Neck**

- In the sitting position, twist your head as far as possible in each direction.
- Sit or stand with your hands on the hips. First circle the head clockwise, and then counter clockwise.
- In the sitting position, try to touch each shoulder with your head.
- In the sitting position look behind as far as possible and then look at your toes.

**Exercise Benefits for Individuals with Arthritis**

- Helps to preserve muscle strength and normal mobility of joints.
- Relieves pain and stiffness.
- Prevents further deformities.
- Improves over-all physical fitness.
- Improves coordination.

**Heat and Cold Treatment**

Head and cold treatment effective means of relaxing muscles and relieving pain in arthritis joints. A hot bath, hat pads, paraffin wax and cold compresses are some methods frequently used.

**Self Management Techniques for Rheumatoid Arthritis**

Self management is the most important aspect of the treatment of Rhematoid arthritis

**The Ten Self Help Techniques**

**1. Positive Mental Attitude**

The patient is told to focus on thins other than pain and their own body. They are encouraged to think positively.

**2. Regular Medication**

The patient is told the value of regular and correct medication.

**3. Regular Exercises**

The patient should follow a regular and appropriate exercise programme, most suited for them.

**4. Use of Joints**

The patient is told the value of correct posture and the methods of using the joints.

**5. Energy Conservation**

Patients are instructed to listen to the body 'inner signals' for rest. Slowing down and avoiding too many activities reduce the stress and strain on the joints.

**6. Assistive Devices**

Devices like splints, braces and walking sticks can help stabilize the joints, provide strength and reduce pain and inflammation.

**7. Adequate Sleep**

A good adequate sleep provides rest to the ailing joints and reduces the pain and swelling.

**8. Massage**

A Good moderate massage brings warmth and relieves pain due to arthritis.

**9. Relaxation Techniques**

Relaxation techniques like yoga, meditation, etc, help to relax the muscles, mind and controls respiration heart rate and blood pressure.

**10. Modification in the Daily Activities**

- Using western toilets
- Bath aids and railings
- Long handle broom stick and mob to clean the floors.
- Use of walking sticks while walking, climbing high chairs
- Avoid squatting on the ground for food.
- To avoid squeezing the clothes.
- To avoid walking on hard and uneven and rough surfaces.
- To sleep on hard surface.

# REVIEW OF LITERATURES

## PROPERTIES OF TRIAL DRUGS

**MEDICINE I: KUMARI MATHIRAI (** ♂

**Ingredients:**

**1. Katralai (** ♂

Aloe barbadensis (aloe vera) Family : asphodeleaceae (liliaceae)

**Classical names:** Kanni, Kumari, Miracle Plant, Sanjivini Buti

**Chemical Constituents**

1. Glycoprotiens – COX 2 Inhibitors
2. Enzymes
   Bradykinage – Reduce Inflammation, Lipase, Protease – Digestion
3. Sugars
   Mucopolysaccharides – Enhance the immune system and help to Detoxiicity, Immuno Regulating effects
4. Fatty Acids
   Anti Inflammatory Agents: β sistosterol, Campesterol, Lupeol, Cheolesterol
5. Salicylic Acid: Anti Inflammatory, Anti bacterial
6. Aloin (Glycosides):
   Barbaloin – Antibacterial activity, Aloe – Emodin, Arthron, Isobarbadoin, Beta Barbaloin
7. Anthroquinones: Analgegic, Antimicrobial, Purgative
   Aloe – emodin, Iso emodin, Resins.
8. Vitamins

Vit A – Anti Oxidant, Vit C, Vit E, Vit B2 (One of the few plant sources)

9. Minerals

   Calcium, Sodium, Potassium, Manganese, Copper, Magnesium, Zinc, Chromium, Selenium - Anti oxidant

10. Amino Acids – 22

**Actions**

Anti Inflammatory, Alterative, Toxic, Antiviral, Anthelmintic, Purgative, Emmenagogue.

- Juices of Leaves - applied to painful inflammations (Dr.K.M.Nadkarni's Indian Materia Medica)

- In USSR – Aloe juice with Iron effective against Anaemia. (Wealth of India)

- Aloe Juice – Used in vitiated conditions of Vatha and Pitha. (Indian medicinal Plants- Vaidhya Rathnam P.S.Variars)

- Radical scavenging glycoprotein inhibiting Cyclooxygenase -2 and Thromboxane A2 Synthase from Aloe Vera – Medicinal and Aromatic Plants Absracts (MAPA) Page 58

**2. VILVAM (ROOT) (** ♂

Aegle Marmelos Family: Rutaceae

**Clinical Names:** Bilva, Bael tree, Holy fruit tree, Maluram.

**Chemical Constituents:**

1. Xanthotoxin, Scopoletin, Tembamide, Umbelliferone, Marmine,
2. Skimmianine – sedatine, hypothermic, Haplopine, Decursinol, Lupeod,
3. Auraptene- Anti tumor effect-coumerin, reducing sugars, Tannin

**Actions**

- 'Vata haram" – Indian Meteria Medica
- Decotion of root, root bark – for intermittent fever (Dr.K.M.Nadkarni's Indian Meteria Medica)
- Roots-Antibiotic-Hand book of Medicinal plants (Prof.S.K.Bhattacharjee)
- Roots- useful in vitiated conditions of Vatha , intermittent fever, swellings, dyspepsia, diarrhea. – Indian Medicinal Plants Vol I; Vaidhya Ratnam P.S.Varier's.
- One of "Dasa mul " Ĕ 10 Roots used in Siddha, Ayurvedha.
- Moderate anti tumor effect – compendium of Indian Medicinal Plants

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**3. KADUKKAI (** ơ

Terminalia Chebula Family: Combretacerae

**Classical Names**: Haritaki, Myrobalans, Suddha, Pathya

**Chemical Constituents:** Tannin, Gallic acid, Chebulinic acid, Lucilage, Iron, Copper

**Actions:**

Laxative, Astrigent

- "Vatha Harra " _Prof. S.K.Bhattacharjee

(Hand Book of Medicinal Plants)

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**4. NEEM ( ŏ**

Azadirachta Indica; Family : Meliaceae

**Classical Names:** Vathari, Vembu, Nimbam, Arittam, Paripathiram, Margosa Tree

**Actions:** Picin – Tonic, Alterative

## II. EXTERNAL MEDICINE – NOCHI THYLAM

**1. NOCHI ( ŏ**

Vitex Negundo Family : Verbenaeceae

**Classical Names :** Nirgundi, Nirnochi, Sirunochi, Sindhuvaram

**Chemical Constituents**

Alkaloids – Nishindine, Hydrocotylene, Glucononitol, Beta Hydroxy Bezoic acid, Vitamin C, Carotena, Glucoside, Diterpene I, Artemetin – Anti Inflammation

**Actions**

- Anagestic, Anti Inflammatory, Anti Bacterial, Anti Fungal
- Inhibited Male rat paw oedema induced by Carragemin – Page 886 Compendium of I.M.P
- Leaves have Anti Inflammatory, Analgegic activities –MAPA
- Decoction of leaves – reduce the Rheumatic swellings of joints sprains
- Leaves – applied for Rheumatic Arthirities Inflammation, Sprains

  (Dr.K.M.Nadkarni's Indian Metiria Medica, the wealth of India.)

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**2. ERUKKU (** ஓ்

Calotropis Gigantea Family: Asclepiadaceae

**Classical Names**: Arukkan

**Actions:**

Dried root bark – substitutes for 1 pecauanna, Febrrifuge Anthelmintic, Depurative diphonatic

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**3. KOTTAM (** ơ

Costus Speorousus Family: Costaceae

**Actions** Tonic, stimulant, diaphoretic

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**ŏĕTHAGARAI VIDHAI (** ơ

Casia Tora Family : Cesalpenaceae.

**Action:** Febriguge, Germicide

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**5. DILL (** ơ

Anethum Graveloens Family : Umbrelliferae

**Actions**: Carminative, deobstruent, stimulant, Antispasmodic
**Chemical Constituents:** Anethine, Apiol, Phellandrene

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**6. GINGILEE OIL (** ơ

Sesamum Indicum Family : Pedaliaceae

**Chemical constituents:**

Sesamin, sesamolin, phytosterol, Vitamin “E”, Oleic, Linoleic Acids, Stearin Palmitin, Myristin

**Actions:** Demulcent, Emollient, Laxatine, Nutritive

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# MATERIALS AND METHODS

The dissertation work on Valiazhal Keelvayu was carried out, during, the year of 2007 -2009 at the post graduate department of sirappu Maruthuvam, Govt. Siddha Medical College, Palayamkottai.

**Selection of Patients:**

For the clinical study 28 patients suffering from Valiazhal Keelvayu, were admitted in the inpatient ward of Government Siddha Medical College, palayamkottai of both sexes and varying age groups. Out of these 20 ideal cases were selected for the study. 30 patients were treated as out patients also.

In this study certain criteria was followed based on clinical symptoms, nutritional status, seasonal variations, economic status, family history and other significant diseases. The confirmation of clinical diagnosis was made on both Siddha and modern aspects.

**Investigations:**

The symptoms of Valiazhal Keelvayu more or less correlates with Rheumatoid arthritis in modern medicine. In Siddha aspect the diagnosis was made under the following criteria.

- Mukkutra nilai
- Ennvagai thervu
- Udal kattukal
- Kalam
- Nilam
- Neer kuri
- Nei kuri

In modern aspects the routine laboratory investigations were made.

**Haematological investigations:**

- Total W.B.C. count.
- Differential W.B.C. count.
- Erythrocyte sedimentation rate.

- ❖ Haemoglobin percentage.
- ❖ Blood Sugar.
- ❖ Blood Urea.
- ❖ Serum Cholesterol.

**Urine Analysis:**

- ❖ Albumin
- ❖ Sugar.
- ❖ Deposits

**Motion Analysis:**

- ❖ Ova
- ❖ Cyst

**Specific investigations:**

- ❖ Rheumatoid factor.
- ❖ Radiographic evaluation.

**Management:**

The drugs were selected after a detailed study of various siddha literatures. They are

1. Kumari Maathirai
2. Nochi Thylam

The pharmacological study and the bio chemical study of both the drugs were conducted at the Department of pharmacology, Department of BioChemistry, Govt. Siddha Medical College, Palayamkottai respectively.

# RESULTS AND OBSERVATION

Results were observed with respect to the following criteria.

1. Age
2. Sex
3. Religion
4. Occupation
5. Food Habits
6. Yaakkai Illakanam
7. Aetiological factors
8. Economic Status
9. Mukkutra Kalam
10. Paruva Kaalam
11. Thinai
12. Mukkutra Theory
13. Udal Kattugal
14. Enn Vagai Thervugal
15. Neikuri
16. Duration of Illness
17. Onset of Disease
18. Clinical Features

a. Symptoms

b. Signs

c. Involvement of Extrimities

d. Joint Involvement

e. Deformities of Joints

19. Results After Treatment

a. Showing Change in Pain & Swelling of Affected Joints

b. Showing Changes in tenderness

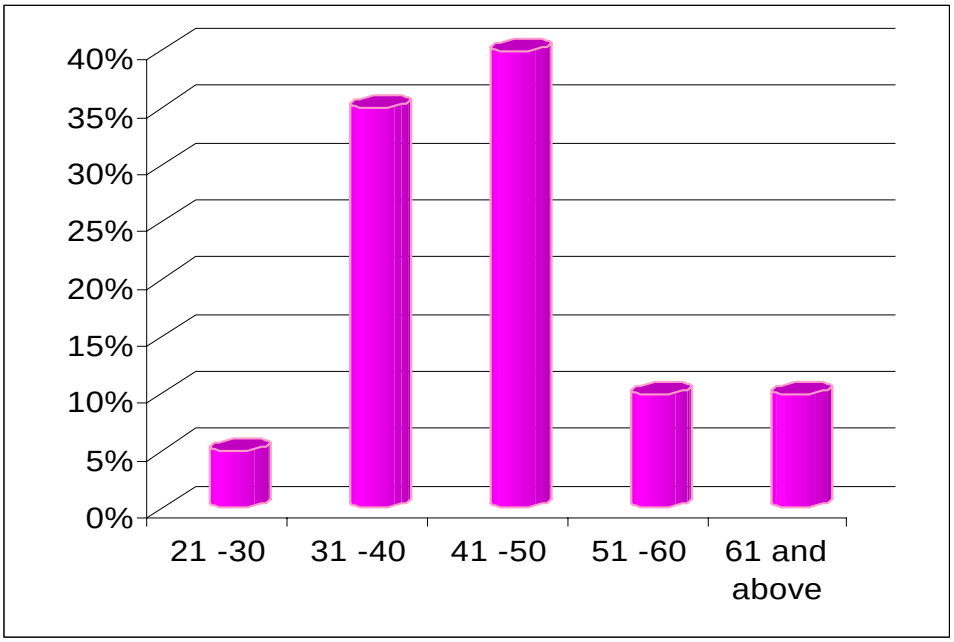
c. Changes in Restriction of Motion

d. Changes in Functional Ability

20. Results.

## 1. AGE DISTRIBUTION:

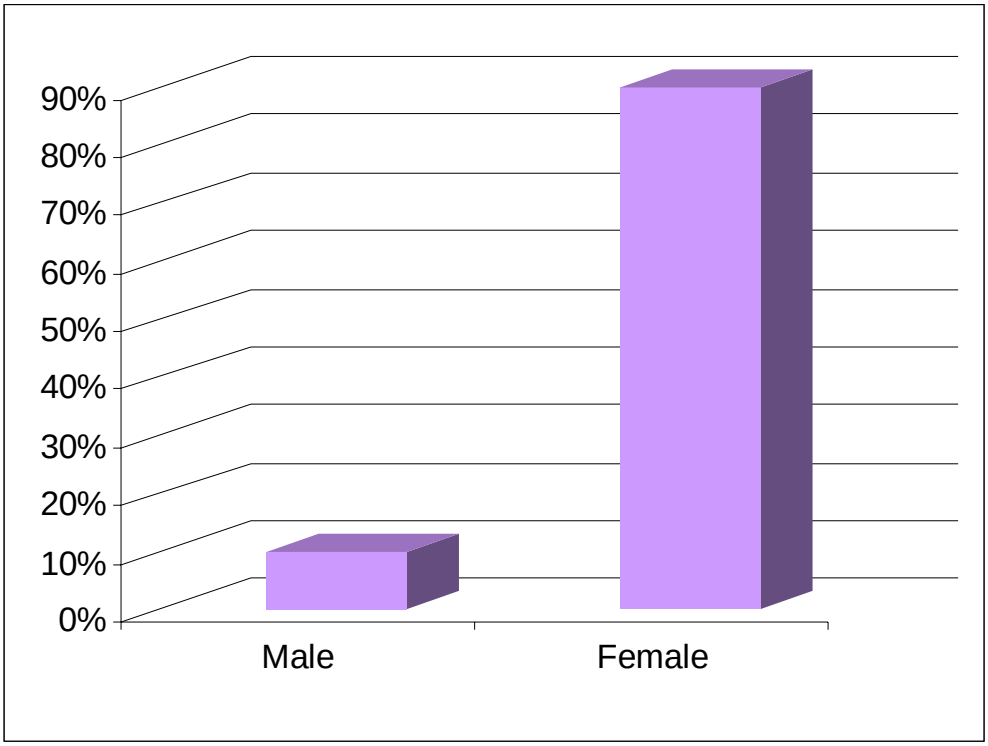
| S.No. | Age (inyears) | No.of Cases | Percentage |
|---|---|---|---|
| 1. | 21 -30 | 1 | 5% |
| 2. | 31 -40 | 7 | 35% |
| 3. | 41 -50 | 8 | 40% |
| 4. | 51 -60 | 2 | 10% |
| 5. | 61 and above | 2 | 10% |




Around 75% of cases were reported during the age 31-50 years.

## 2. SEX DISTRIBUTION:

| S.No. | Sex | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Male | 2 | 10% |
| 2. | Female | 18 | 90% |
| Total | | 20 | 100% |




Out of the twenty patients, 2 (10%) were males and 18 (90%) were females.

**3. RELEGION:**

| S.No | Religion | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Hindu | 18 | 90% |
| 2. | Muslim | - | - |
| 3. | Christian | 2 | 10% |

**4. AETIOLOGICAL FACTORS:**

| S.No | Aetiological factors | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Family history | 3 | 15% |
| 2. | Previous history | 3 | 15% |
| 3. | Miscellaneous | 14 | 70% |

**5. PHYSICAL CONSTITUTION (YAKKAI ILLAKKANAM)**

| S.No. | Yakkai Illakkanam | No. of cases | Percentage |
|---|---|---|---|
| 1. | Vatha Pitham | 8 | 40% |
| 2 | Vatha Kapham | 10 | 50% |
| 3. | Pitha Vatham | 1 | 5% |
| 4. | Pitha Kapham | 1 | 5% |
| 5. | Kapha Vatham | - | - |
| 6. | Kapha Pitham | - | - |

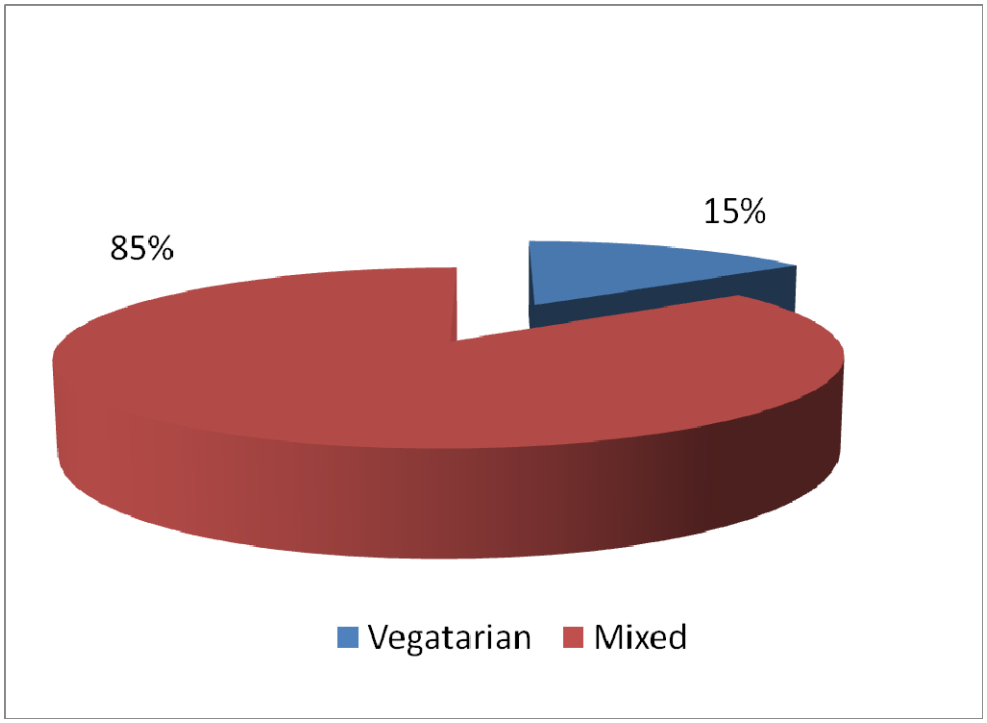
**6. OCCUPATION:**

| S.No | Occupation | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Skilled workers | 2 | 10% |
| 2. | Manual labours | 15 | 75% |
| 3. | Others | 3 | 15% |


The percentage of occupation was 10% among skilled workers, 75 % were manual labours and 15% were others.

**7. FOOD HABITS:**

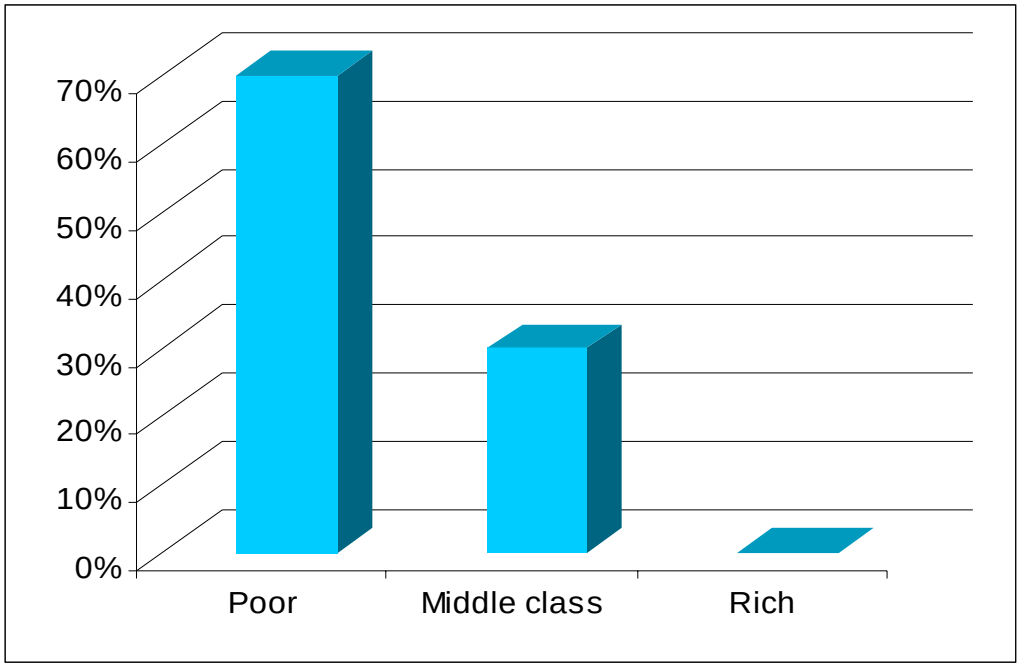
| S.No | Food Habits | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Vegatarian | 3 | 15% |
| 2. | Mixed | 17 | 85% |




According to food habits, 85 % of the cases had mixed diet and 15% were vegetarians.

## 8. SOCIO – ECONOMIC STATUS:

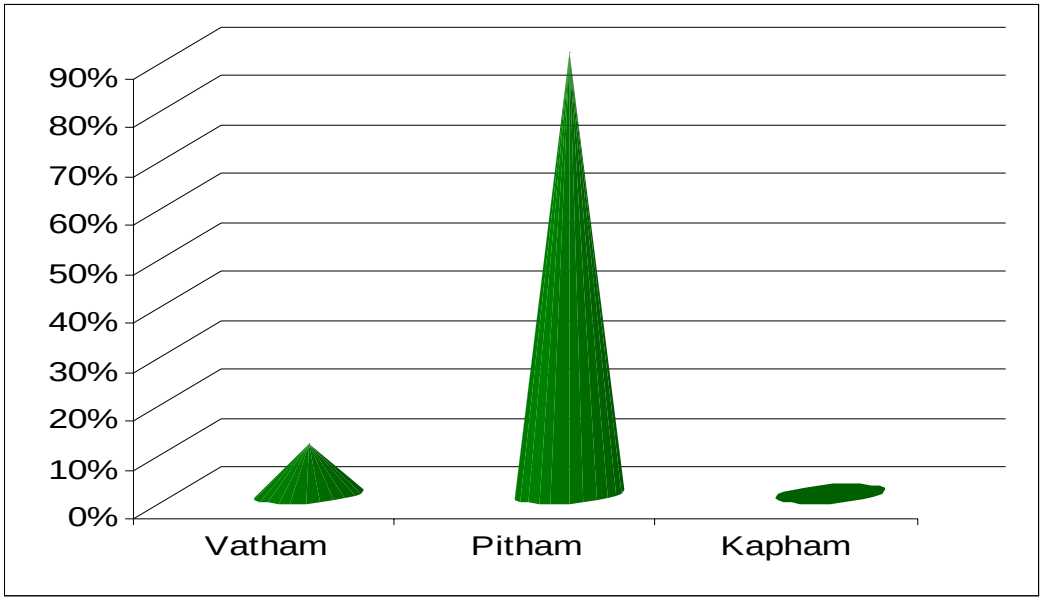
| S.No | Socio economic status | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Poor | 14 | 70% |
| 2. | Middle class | 6 | 30% |
| 3. | Rich | - | - |




According to the study, 70% of the cases belonged to poor class economic status.

## 9. MUKKUTRA KAALAM:

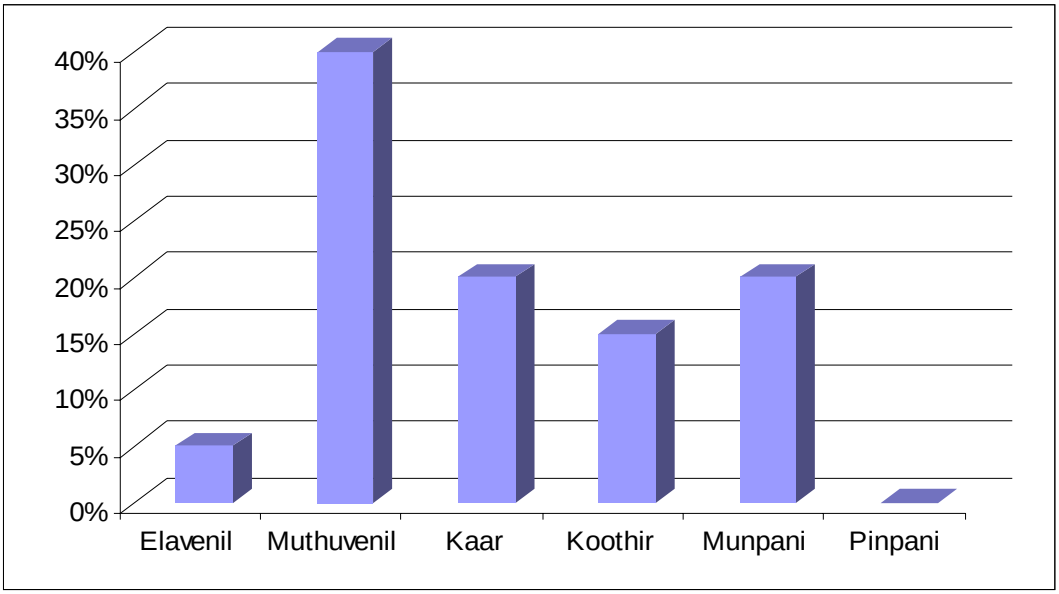
| S.No. | Kalam | | No.of cases | Percentage | Total percentage |
|---|---|---|---|---|---|
| 1. | Vatham | 0-11 | - | - | 10% |
| | | 11-22 | - | - | |
| | | 22-33 | 2 | 10% | |
| 2. | Pitham | 33-44 | 6 | 30% | 90% |
| | | 44-55 | 9 | 45% | |
| | | 55-66 | 3 | 15% | |
| 3. | Kapham | 66-77 | 0 | 0 | 0 |
| | | 77-88 | - | - | |
| | | 88-100 | - | - | |




Among the twenty cases, 90% of the cases were under Pitha Kaalam

**10. PARUVA KAALAM:**

| S.No. | Paruva kaalam | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Elavenil (Chithirai – Vaikasi) | 1 | 5% |
| 2. | Muthuvenil (Aani – Aadi) | 8 | 40% |
| 3. | Kaar (Aavani – Purattasi) | 4 | 20% |
| 4. | Koothir (Ippasi – Kaarthikai) | 3 | 15% |
| 5. | Munpani (Markazhi – Thai) | 4 | 20% |
| 6. | Pinpani (Maasi – Panguni) | 0 | 0 |




Under Paruva Kaalam, the highest incidence 40% was noted in Muthuvenil.

**11.THINAI**

| S.No. | Thinai | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Kurinji | 1 | 5% |
| 2. | Mullai | 2 | 10% |
| 3. | Marutham | 15 | 75% |
| 4. | Neithal | 2 | 10% |
| 5. | Paalai | - | - |

All the twenty cased belonged to Marutha nilam

**12. MUKKUTRA THEORY:**

**a) DERANGEMENT IN THE TYPES OF VATHAM**

| S.No. | Types of Vatham | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Pranan | - | - |
| 2. | Abanan | 15 | 75% |
| 3. | Viyanan | 20 | 100% |
| 4. | Uthanan | - | - |
| 5. | Samanan | 15 | 75% |
| 6. | Naagan | - | - |
| 7. | Koorman | - | - |
| 8. | Kirukaran | - | - |
| 9. | Devathathan | 14 | 70% |
| 10. | Dananjeyan | - | - |

Abanan was affected in 75% of Cases, Viyanan was also affected in 100% of the cases, Samanan was affected in 75% of the cases and Devathathan were affected in 70% of the cases.

**b) DERANGEMENT IN TYPES OF PITHAM**

| S.No. | Types of Pitham | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Analam | 15 | 75 |
| 2. | Ranjakam | 15 | 75 |
| 3. | Saathakam | 20 | 100 |
| 4. | Prasakam | 5 | 25 |
| 5. | Aalosakam | - | - |

Among the cases studied, Analam pitham was affected in 75% of the cases and Saathaka pitham was affected in 100% of the cases and Prasakam was affected in 25% of the cases and Ranjakam was affected in 75% of cases.

**c) DERANGEMENT IN TYPES OF KABAM:**

| S.No. | Types of Kabam | No.of Cases | **Percentage** |
|---|---|---|---|
| 1. | Avalambakam | - | - |
| 2. | Kilethakam | 15 | 75 |
| 3. | Pothakam | - | - |
| 4. | Tharpakam | - | - |
| 5. | Santhikam | 20 | 100 |

**13. UDALKATTUGAL**

| S.No. | Udalkattugal | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Saaram | 20 | 100 |
| 2. | Senneer | 20 | 100 |
| 3. | Oon | 2 | 10 |
| 4. | Kozhuppu | 20 | 100 |
| 5. | Enbu | 20 | 100 |
| 6. | Moolai | 20 | 100 |
| 7. | Sukkilam/ Suronitham | - | - |

Among the 20 cases, Saaram,Seneer, Kozhupu, Enbu and Moolai were found affected in 100% of the cases and in 10% of the cases Oon was affected.

**14. ENNVAGAI THERVUGAL:**

| S.No. | Enn Vagai Thervugal | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Naa | 5 | 25 |
| 2. | Niram | 10 | 50 |
| 3. | Mozhi | - | - |
| 4. | Vizhi | - | - |
| 5. | Sparism | 20 | 100 |
| 6. | Naadi | 20 | 100 |
| 7. | Malam | 15 | 75 |
| 8. | Moothiram | 2 | 10 |

Among the cases studied, Sparism and Naadi were affected in 100% of the cases. Malam is affected in 75% of the cases and Niram is affected in 50% of the cases.

**15. NEIKURI**

| S.No. | Character of Urine | Neikuri Reference | No.of Cases | Percentage |
|---|---|---|---|---|
| 1. | Spreads like snake | Vatha Neer | 10 | 50 |
| 2. | Spreads like ring | Pitha Neer | - | - |
| 3. | Spreads like pearl | Kaba Neer | 8 | 40 |
| 4. | Spreads like snake in ring | Thontha Neer | 2 | 10 |

Neikuri in 50% of the cases was Vatha neer and 40% of the cases were Kaba Neer and 10% of cases wereThontha neer respectively.

**16. DURATION OF THE ILLNESS**

| S.No. | Duration of illness | No.of Cases | Percentage |
|---|---|---|---|
| 1 | Below 1 year | 2 | 10 |
| 2. | 1 to 2 years | 9 | 45 |
| 3. | 2 to 3 years | 4 | 20 |
| 4. | Above 3 years | 5 | 25 |

**17. ONSET OF THE DISEASE:**

| S.No | Mode of onset | No. of cases | Percentage |
|---|---|---|---|
| 1. | Sudden | 3 | 15% |
| 2. | Gradual | 17 | 85% |

According to the study, 85% of the cases had gradual onset of disease and 15% had sudden onset.

## 18. THE CLINICAL FEATURES:

### a) SYMPTOMS:

| S.No. | Symptoms | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Joint pain | 20 | 100 |
| 2. | Swelling | 20 | 100 |
| 3. | Morning stiffness | 20 | 100 |
| 4. | Restricted movements | 18 | 90 |
| 5. | Difficulty in chewing | - | - |
| 6. | Difficulty in walking | 5 | 25 |
| 7. | Neck pain | 1 | 5 |
| 8. | Sleeplessness | 14 | 70 |
| 9. | Fever | 6 | 30 |
| 10. | Loss of appetite | 15 | 75 |
| 11. | Loss of weight | 15 | 75 |
| 12. | Constipation | 15 | 75 |
| 13. | Easy fatiguability | 20 | 100 |

Among the 20 patients, 100 % of the cases had joint pain, swelling, morning stiffness and Easy fatiguability. 90 % of the cases had restricted movements.

**b) CLINICAL FEATURES (SIGNS):**

| S.No. | Signs | No. of Cases | Percentage |
|---|---|---|---|
| 1. | Subcutaneous nodules | 2 | 10 |
| 2. | Muscle wasting | 2 | 10 |
| 3. | Opthalmic manifestation | - | - |
| 4. | Hepatomegaly | - | - |
| 5. | Spleenomegaly | - | - |
| 6. | Anaemia | 15 | 75 |
| 7. | Tenderness | 20 | 100 |

Out of the 20 Cases, 100% of the cases had tenderness and 75% of the cases were anaemic and 10% of the cases had muscle wasting and 10 % of the cases had subcutaneous nodules.

**c) TABLE SHOWING INVOLVEMENT OF EXTREMITIES**

| S.No. | Mode of onset | | No. of Cases | Percentage |
|---|---|---|---|---|
| | Early | Late | | |
| 1. | Upper extremities | Lower extremities | 15 | 75 |
| 2. | Lower extremities | Upper extremities | 3 | 15 |
| 3. | Both extremities | | 2 | 10 |

Out of the 20 Cases 75 % of the cases had involvement of the upper extremities first and then the lower extremities. 15% of the cases had involvement of the lower extremities first and then the upper extremities. In 10% of the cases both extremities were involved.

**d) THE JOINT INVOLVEMENT:**

| S.No. | Joints involved | No. of Cases | Percentage |
|---|---|---|---|
| 1. | Proximal interphalangeal joints of hand. | 20 | 100 |
| 2. | Metacarpophalangeal joints | 20 | 100 |
| 3. | Wrist joint | 18 | 90 |
| 4. | Elbow | 4 | 20 |
| 5. | Shoulder | 1 | 5 |
| 6. | Temporomandibular jt | - | - |
| 7. | Sternoclavicular jt. | - | - |
| 8. | Cervical spine | 1 | 1 |
| 9. | Hip joint | - | - |
| 10. | Knee joint | 5 | 25 |
| 11. | Ankle Joint | 5 | 25 |
| 12. | Metatarsophalangeal Jt | 13 | 65 |

Out of the cases, 100 % of the cases had **proximal interphalangeal joint** and **metacarpophalangeal joint** involvement. 90 % had wrist joint involvement. 65% had metatarsophalangeal joint involvement. 25% had knee joint and ankle involvement. 20% had elbow joint involvement.

**e) TABLE SHOWING DEFORMITIES OF THE JOINTS:**

| S.No. | Deformities | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Interphalangeal joints | 4 | 20% |
| 2. | Metacapophalangeal joints | 3 | 15% |
| 3. | Wrist joint | 2 | 10% |
| 4. | Elbow joint | 2 | 10% |
| 5. | Shoulder joint | - | - |
| 6. | Hip joint | - | - |
| 7. | Knee joint | - | - |
| 8. | Ankle joint | - | - |
| 9. | Metatarsopahalangeal joint | - | - |
| 10. | Spine | - | - |

Out of the 20 cases studied 20% of the cases had deformities in the Interphalangea joint, 15% of the cases had in Meta carpophalangeal joint and 10% of cases had in the wrist and elbow joint.

**19. RESULTS AFTER TREATMENT**:

**a) SHOWING CHANGE IN PAIN AND SWELLING OF AFFECTED JOINTS**:

| Sl. No | Degree of pain and swelling | No. of patients affected | |
|---|---|---|---|
| | | Before treatment | After treatment |
| 1. | Severe (+++) | 14 (70%) | - |
| 2. | Moderate (++) | 5 (25%) | 2 (10%) |
| 3. | Mild (+) | 1 (5%) | 9 (45%) |
| 4. | Nil | - | 9 (45%) |

Out of 20 cases, 14 (70%) of patients had severe pain after the treatment, 9 (45%) cases had no pain.

**b) SHOWING CHANGES IN TENDERNESS OF AFFECTED JOINTS:**

| Sl. No | Degree of tenderness | No. of patients affected | |
|---|---|---|---|
| | | Before treatment | After treatment |
| 1. | Grade IV | 1 (5%) | - |
| 2. | Grade III | 1 (5%) | - |
| 3. | Grade II | 2 (10%) | 1 (5%) |
| 4. | Grade I | 16 (80%) | 7 (35%) |
| 5. | Grade 0 | - | 12 (60%) |

Out of 20 cases, 16 (80%) cases had tenderness of Grade I, 2 (10%) cases had tenderness of Grade II, 1 (5%) case had tenderness of Grade III and , 1 (5%) case had tenderness of Grade IV. After the treatment 12 (60%) cases had no tenderness.

**C) CHANGES IN RESTRICTION OF MOTION:**

| Sl. No | Restriction of motion | No. of patients affected | |
|---|---|---|---|
| | | Before treatment | After treatment |
| 1. | Grade IV | - | - |
| 2. | Grade III | 7 (35%) | - |
| 3. | Grade II | 10 (50%) | 5 (25%) |
| 4. | Grade I | 3 (15%) | 15 (75%) |

Out of 20 cases, 10 (50%) cases were Grade II, 7 (35%) cases were Grade III, and 3 (15%) were Grade I. After the treatment 15 (75%) cases were not restricted to movements.

**d) CHANGES IN FUNCTIONAL ABILITY:**

| Sl. No | Functional Grade | No. of patients affected | |
|---|---|---|---|
| | | Before treatment | After treatment |
| 1. | Grade V | 4 (20%) | 14 (70%) |
| 2. | Grade IV | 12 (60%) | 4 (20%) |
| 3. | Grade III | 4 (20%) | 2 (10%) |
| 4. | Grade II | - | - |
| 5. | Grade I | - | - |
| 6. | Grade 0 | - | - |

Regarding to the functional ability, Out of 20 cases, 12 (60%) cases had Grade IV, 4 (20%) cases each had Grade IV and Grade III. They were improved and the result as follow as Grade III, 2 (10%), Grade IV, 4 (20%) and Grade V 14 (70%)

**e) DURATION OF MORNING STIFFNESS AND TIME TAKEN TO WALK**

| Sl. No | IP. No. | Morning Stiffness (in minutes) | | Time taken to walk about 100 ft (in minutes) | |
|---|---|---|---|---|---|
| | | Before treatment | After Treatment | Before treatment | After Treatment |
| 1. | 2613 | 120 | 40 | 8.2 | 7.2 |
| 2. | 2340 | 180 | 45 | 7.8 | 5.3 |
| 3. | 2644 | 90 | 10 | 7.0 | 5.4 |
| 4. | 2748 | 120 | 20 | 7.4 | 6.0 |
| 5. | 2758 | 90 | 20 | 7.5 | 6.0 |
| 6. | 3074 | 120 | 25 | 7.8 | 5.5 |
| 7. | 32 | 120 | 60 | 8.1 | 6.0 |
| 8. | 255 | 180 | 45 | 8.0 | 5.6 |
| 9. | 421 | 120 | 30 | 7.8 | 5.7 |
| 10 | 447 | 120 | 30 | 7.8 | 5.2 |
| 11. | 1212 | 90 | 20 | 7.5 | 5.1 |
| 12. | 1501 | 120 | 10 | 7.9 | 5.3 |
| 13. | 1502 | 120 | 10 | 8.0 | 6.1 |
| 14. | 1564 | 120 | 20 | 7.9 | 5.8 |
| 15. | 1565 | 180 | 20 | 8.1 | 5.6 |
| 16. | 1607 | 180 | 15 | 8.0 | 6.0 |
| 17. | 1616 | 180 | 20 | 7.9 | 5.8 |
| 18. | 1788 | 120 | 20 | 7.5 | 5.3 |
| 19. | 2230 | 180 | 60 | 7.6 | 5.2 |
| 20. | 2269 | 120 | 45 | 7.7 | 5.3 |

## f) MEASUREMENT OF AFFECTED JOINTS : (IN INCHES)

| Index finger | | | | Middle finger | | | | Ring finger | | | | Little finger | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right | | Left | | Right | | Left | | Right | | Left | | Right | | Left | |
| BT | AT | BT | AT | BT | AT | BT | AT | BT | AT | BT | AT | BT | AT | BT | AT |
| 2.3 | 2.2 | 2.3 | 2.2 | 2.5 | 2.1 | 2.4 | 2.0 | 2.4 | 2.0 | 2.4 | 2.0 | 1.6 | 1.5 | 1.6 | 1.5 |
| 2.4 | 2.1 | 2.4 | 2.1 | 2.6 | 2.0 | 2.5 | 2.1 | 2.4 | 2.1 | 2.4 | 2.0 | 1.4 | 1.4 | 1.4 | 1.4 |
| 2.3 | 2.0 | 2.3 | 2.1 | 2.4 | 2.0 | 2.4 | 2.0 | 2.5 | 2.0 | 2.5 | 2.1 | 1.5 | 1.4 | 1.5 | 1.4 |
| 2.3 | 2.0 | 2.3 | 2.1 | 2.4 | 2.0 | 2.4 | 2.0 | 2.5 | 2.0 | 2.5 | 2.0 | 1.5 | 1.4 | 1.4 | 1.4 |
| 2.3 | 2.1 | 2.3 | 2.0 | 2.5 | 2.1 | 2.5 | 2.0 | 2.5 | 2.1 | 2.5 | 2.0 | 1.5 | 1.4 | 1.5 | 1.4 |
| 2.4 | 2.2 | 2.3 | 2.1 | 2.4 | 2.0 | 2.4 | 2.1 | 2.5 | 2.0 | 2.5 | 2.0 | 1.4 | 1.4 | 1.5 | 1.4 |
| 2.3 | 2.1 | 2.3 | 2.0 | 2.4 | 2.1 | 2.5 | 2.0 | 2.4 | 2.0 | 2.4 | 2.1 | 1.5 | 1.4 | 1.4 | 1.4 |
| 2.3 | 2.1 | 2.3 | 2.0 | 2.5 | 2.1 | 2.4 | 2.1 | 2.3 | 2.0 | 2.3 | 2.0 | 1.4 | 1.4 | 1.5 | 1.4 |
| 2.3 | 2.0 | 2.3 | 2.0 | 2.6 | 2.0 | 2.4 | 2.1 | 2.5 | 2.0 | 2.4 | 2.0 | 1.4 | 1.4 | 1.4 | 1.4 |
| 2.4 | 2.1 | 2.4 | 2.1 | 2.5 | 2.1 | 2.5 | 2.1 | 2.4 | 2.0 | 2.4 | 2.0 | 1.5 | 1.4 | 1.4 | 1.4 |
| 2.4 | 2.0 | 2.4 | 2.0 | 2.4 | 2.0 | 2.5 | 2.0 | 2.3 | 2.1 | 2.3 | 2.0 | 1.4 | 1.4 | 1.5 | 1.4 |
| 2.3 | 2.1 | 2.3 | 2.0 | 2.3 | 2.1 | 2.4 | 2.0 | 2.5 | 2.0 | 2.3 | 2.0 | 1.5 | 1.5 | 1.4 | 1.4 |
| 2.4 | 2.2 | 2.3 | 2.1 | 2.4 | 2.1 | 2.3 | 2.0 | 2.4 | 2.0 | 2.3 | 2.0 | 1.5 | 1.4 | 1.4 | 1.4 |
| 2.3 | 2.0 | 2.3 | 2.0 | 2.4 | 2.0 | 2.4 | 2.0 | 2.5 | 2.0 | 2.4 | 2.0 | 1.4 | 1.4 | 1.4 | 1.4 |
| 2.3 | 2.1 | 2.2 | 2.0 | 2.6 | 2.1 | 2.4 | 2.0 | 2.3 | 2.0 | 2.3 | 2.1 | 1.5 | 1.4 | 1.4 | 1.4 |
| 2.4 | 2.0 | 2.3 | 2.0 | 2.5 | 2.1 | 2.3 | 2.0 | 2.4 | 2.1 | 2.3 | 2.0 | 1.4 | 1.4 | 1.5 | 1.4 |
| 2.3 | 2.0 | 2.4 | 2.1 | 2.4 | 2.0 | 2.4 | 2.1 | 2.3 | 2.0 | 2.4 | 2.0 | 1.4 | 1.4 | 1.4 | 1.4 |
| 2.3 | 2.1 | 2.2 | 2.1 | 2.3 | 2.0 | 2.5 | 2.0 | 2.4 | 2.0 | 2.5 | 2.0 | 1.5 | 1.5 | 1.4 | 1.4 |
| 2.4 | 2.1 | 2.2 | 2.1 | 2.5 | 2.1 | 2.4 | 2.0 | 2.3 | 2.0 | 2.3 | 2.0 | 1.4 | 1.4 | 1.4 | 1.4 |
| 2.3 | 2.0 | 2.3 | 2.0 | 2.4 | 2.1 | 2.4 | 2.0 | 2.5 | 2.0 | 2.4 | 2.0 | 1.5 | 1.4 | 1.4 | 1.4 |
| 2.3 | 2.0 | 2.3 | 2.1 | 2.6 | 2.0 | 2.3 | 2.1 | 2.3 | 2.1 | 2.3 | 2.0 | 1.5 | 1.4 | 1.4 | 1.4 |

## g) MEASUREMENT OF AFFECTED JOINTS: (IN INCHES)

| Knee Joint | | | | Ankle Joint | | | |
|---|---|---|---|---|---|---|---|
| Right | | Left | | Right | | Left | |
| BT | AT | BT | AT | BT | AT | BT | AT |
| 12.0 | 11.0 | 12.0 | 11.3 | 8.0 | 7.6 | 8.0 | 7.5 |
| 13.5 | 12.5 | 13.0 | 12.5 | 8.0 | 7.4 | 8.0 | 7.4 |
| 14.0 | 13.5 | 13.5 | 13.0 | 7.6 | 7.4 | 7.6 | 7.4 |
| 11.5 | 11.0 | 11.5 | 11.0 | 7.8 | 7.5 | 7.9 | 7.5 |
| 12.0 | 11.8 | 12.0 | 11.8 | 8.0 | 7.5 | 8.0 | 7.5 |

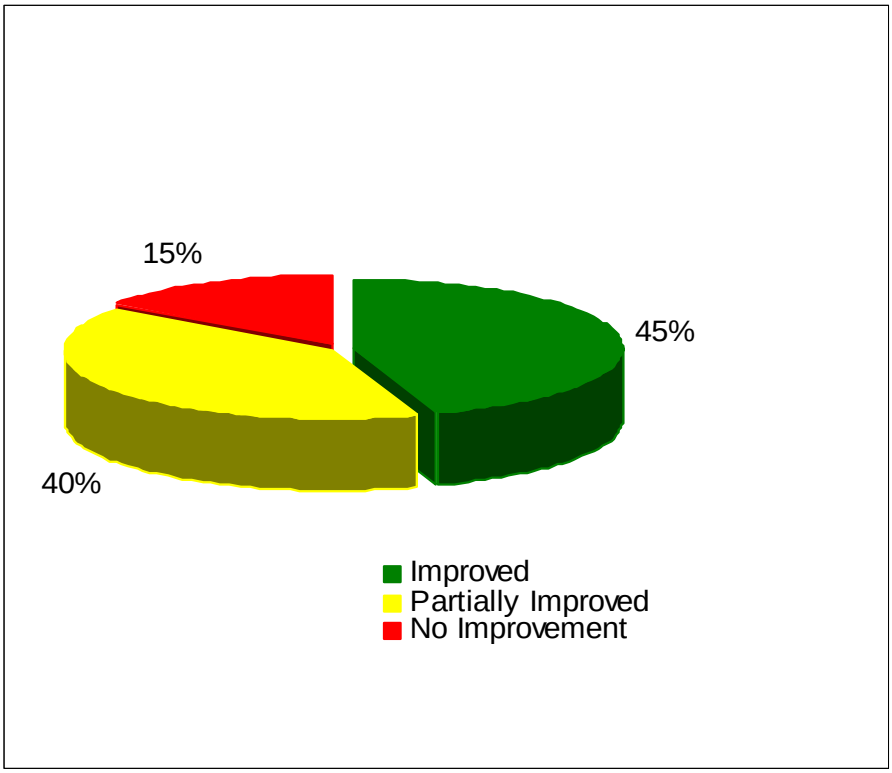
## 20. OVERALL RESULT:

| S.No. | Results | No.of Cases | Percentage |
|---|---|---|---|
| 1. | Improved | 9 | 45 |
| 2. | Partially improved | 8 | 40 |
| 3. | No improvement | 3 | 15 |

Improved : Complete subsidence of pain and Swelling

Parially Improved : Relief of pain, reduction in swelling and increased range of movements

No Improvement : Persistance of pain, Swelling, other signs and symptoms.



# DISCUSSION

According to Siddha system of medicine diseases are classified in to 4448 types. Among them Yudi vaidhaya chinthamani has classified Vatha diseases into 80 types. Among the 80 types, 10 varieties are concerned with joint diseases. One among them is Santhu vatham. In Sabapathy scripts this disease has been compared with the disease Keel vayu, explained in Siddha Maruthuvam text.

Valiazhal Keelvayu also mentioned by Agathiar in his Agathiar Gunavagadam as Vatha Pitha Soolai (Vatha Azhal Soolai). The symptoms of this disease correlate with Rheumatoid Arthritis, which is the study topic of author. 28 cases of Valiazhal keelvayu were admitted in the Post graduate Sirappu maruthuvam inpatient ward, GSMC Palayamkottai. Out of these twenty cases were selected for this study and also 30 patients were treated as outpatients.

For diagnostic purposes the parameter used in siddha aspect were Porial Arithal, Pulanal Arithal, Vinaathal, Kanmendriyam, Gnanendriyam, Uyir Thathukkal, Udal Thathukal, Ennvagai Thervugal, Neerkuri, Neikuri etc. The modern parameters used were criteria for the diagnosis of Rheumatoid arthritis, laboratory investigations, radiological evaluation etc. All the patients were strictly advised to follow diet restriction and peaceful lifestyle.

**THE SEX DISTRIBUTION:**

Out of the twenty patients 2 (10%) cases were males and 18 were females (90%).

So Valiazhal Keelvayu is most commonly affected in female.

**THE AGE DISTRIBUTION:**

Among the 20 cases, 35% of the cases were between 31 - 40 years. 40% of the cases were between 41-50 years and 20% of the cases were above 61 years. From the above data, the incidence of the disease seems to be more in the age group of 31-50 years.

So the disease is more common in fourth and fifth decade as said in modern medicine.

**THE KAALAM:**

According to Siddha concept maximum number of cases, 90% were noted to be in Pitha Kalam which is between 33 to 66 years, which co – ordinates with modern concept of the incidence in 4th – 5th decade.

This is why because of patients in Pitha Kaalam have risk factors like smoking, alcohol, etc and they have very much stress in their life.

**THE PARUVA KALAM:**

Among the 20 cases, 40% of the cases were seemed to develop the disease during Muthuvenil kalam (Aani-Aadi) 20% of the cases Kaar Kaalam (Aavani-Puratasi) and 20% of the cases developed during Munpani kalam (Markazhi – Thai).

So highest percentage was occurred in the Vali provoked Kaalam.

**THE THINAI:**

Among the 20 cases, 15 were belonged to Marutha nilam, two cases each for Mullai and Neithal and one from Kurinchi. Even though as

per Siddha literatures, Marutha nilam is said to be free from diseases, here the patients developed diseases due to alteration in their food habits and routine activities.

**THE SOCIO – ECONOMIC STATUS:**

70% of the cases were under poor class; where as 30% of the cases belonged to middle economic groups.

**THE AETIOLOGICAL FACTORS:**

15% of the cases had positive family history. And 15% had previous history. Others were 70% cases (about 5 cases were found in Chickungunia affected persons). Literary evidences shows that Valiazhal keel vayu develops during winter and has genetic predisposition.

**THE ONSET OF DISEASE:**

The mode of onset was acute in 15% and gradual onset in 85% of the cases. Thus the incidence of the disease with gradual onset is more, as per literatures.

**THE CLINICAL MANIFESTATIONS:**

The patients with Valiazhal keelvayu (R.A.) present with articular manifestations with or without extra articular manifestations were noticed.

100 % of the cases had joint pain, swelling, easy fatigability and morning stiffness.90% of the cases had restricted movements and 25% of the cases had difficulty in walking. 5% of the cases had pain in the neck. The joint in all the cases experienced early morning stiffness for bout 2-3

hours. Decreased movements of the joints noticed in all the cases which were assessed by asking the patient to move the joint in particular direction.

**INVOLVEMENT OF UPPER AND LOWER EXTREMITIES:**

The incidence of initial involvement of joints of the upper limb was noticed in 75 % of the cases. 15 % of the cases, showed involvement of the lower limbs while 10% of the cases showed involvement of upper and lower limbs simultaneously.

**INVOLVEMENT OF INDIVIDUAL JOINTS:**

The proximal interphalangeal joint and meta carpophalangeal joints were involved in 100% of the cases. 90% of the cases wrist joint. 25% of the cases ankle joint. 25% of the cases the knee joint, 20% of the cases the elbowjoint 5% of the cases cervical and 5% of the cases shoulder and 65% of the cases metatarsophalangel joints were involved.

**DEFORMITIES OF JOINTS:**

10% of the cases had deformities in the wrist joint and elbow joints, 15% of the cases metacarpophalangeal joint and 20% cases were nterphalangeal joint.

**ELICITATION OF EXTRA ARTICULAR MANIFESTATIONS:**

Besides the articular symptoms certain signs which include the examination of the enlargement of liver and spleen were carried out. Examinations of respiratory system, cardio vascular system, were also carried out. Opthalmic manifestations were also noted. Either

hepatomegaly or spleenomegaly was not present in any of the cases. Likewise respiratory and cardio vascular manifestation and ophthalmic manifestation were not present. 5% of case had rheumatoid nodule.

**UYIR THATHUKKAL:**

Uyir thathukkal include 3 vital humours namely

Vatham
Pitham
Kabam

The derangement in any of the above three causes diseases. They were noticed in the 20 cases and are discussed below.

**VATHAM:**

Viyanan was affected in 100% of the cases because Viyanan is the main constituent in flexion and extension movements. Abanan, Samanan and Kiruharan were affected in 75% of the cases. Devathathan was affected in 70% of the cases. When abanan is affected it produces constipation, the disturbance in viyanan produce pain and restricted movements of the joints and if samanan is affected there is loss of appetite and when Devathathan is affected, insomnia causes.

**PITHAM:**

Anala pitham, Ranjagam were affected in 75% of the cases. Saathaga pitham affected in 100% of the cases. Prasakam was affected in 25% of the cases.

Affected anala pitham produce loss of appetite. Ranjakam, when affected produces decrease in haemoglobin and affected saathaga pitham

produce restriction of movements. So they are unable to carry out regular works properly.

**KABAM:**

Santhigam was affected in 100% of the cases. Kilethagam was affected in 75% of the cases.

Affected kilethagam produce loss of appetite and affected santhigam produce joint pain, swelling and restriction of movements.

**UDALKATTUGAL:**

Saaram, Seeneer, Koluppu, Moolai and Enbu were affected in 100% of the cases which shows general debility and restricted movements, joint pain and swelling.

Oon was affected in 10% of the cases which shows, slight muscular wasting.

**ENNVAGAI THERVGAL:**

Naadi was observed in all the 20 cases. All the cases had thontha naadi.

Sparism was affected in all the cases which showed joint tenderness, warmthness over the inflammed joints.

Malam was affected in 75% of cases and they had constipation.

Naa was affected in 25% of the cases and the tongue was coated and was pale in colour due to anaemia.

Niram was affected in 50% of the cases.

**NEIKURI:**

50% of the cases showed Vaatha Neer and 40% of the cases had Kapha Neer and 10% of the cases had Thontha Neer.

**INVESTIGATIONS:**

Besides Siddha based investigations since the disease has been compared with Rheumatoid Arthritis, investigations meant for Rheumatoid Arthritis were also done. Routine examination of blood, urine and stools were done during the admission and the discharge.

Examination of urine and stools showed no abnormalities, blood showed 75% of the cases showed decreased in haemoglobin percentage and 100% of the cases had increased ESR with maximum of 100 mm in one hour. Rheumatoid arthritis factor was positive in eighteen cases. Blood sugar, Blood urea and Serum cholesterol were done in the Biochemistry Department Govt. Siddha Medical College, Palayamkottai. The values were found normal in all the cases.

The patients were also subjected to radiological evaluation which revealed Rheumatoid Arthritis.

Hands with wrist joints AP view:-

Reduced interphalangeal joint space

Soft tissues swelling

Oesteophorosis

Peri articular erosion

Deformities

KNEE:

Oesteophorosis

Narrowing of joints space

FEET AND ANKLE:

Synovial thickening

Sclerosis

Narrowing of joints space

**THE MANAGEMENT:**

Siddha system of medicine follows certain criterias in the management of the diseases.

t̄ t̄

This shows that before treating Vatha diseases, laxatives or purgatives can be administered to correct altered vatham.

Valiazhal Keelvayu comes under Vatha diseases; all the 20 cases were given Vellai ennai- ½ to 1 ounce (14 to 18 ml) at morning on the first day of admission. The next day the following medicines were started.

The internal drug given was **“** t̄ **(Kumari maathirai)** one tablet two times daily with jaggeryand the external drug given was **“ ” (Nochi Thylam)**. The patients were asked to apply the oil over the swellings and in the areas of pain. Clinically the drugs were free from side effects.

**ABOUT THE TRIAL DRUGS:**

**KUMARI MATHIRAI:**

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Kumari Maathirai contains, Kadukkai, in which the main ingredient is ferrous ion which is easily absorbable and helps to increases the Hb level in this patient. It has significant acute and chronic, anti inflammatory, analgesic, antipyretic effects, so the trial drugs reduces the pain and swelling and also treat the anemia in Valiazhal Keelvayu patient.

**NOCHI THYLAM:**

Its main ingredient Nochi had analgesic and anti inflammatory properties. So external applications of this reduce the pain, swelling, stiffness in affected joints and increase the range of movements.

Hot water fomentation and fomentation with Nochi leaves were advised to all the patients after the application of the oil. In the initial stage all the patients were advised to take bed rest. After the severity of symptoms had reduced, they were advised to do some exercises.

The patients were observed carefully when they were performing the exercises. Care was taken for patients to perform exercise slowly without any strain. Sava Asana is advised to all the patients. Since the Valiazhal Keelvayu affects the patients physically and psychologically, this Asana gives good sleep and relives the mental stress.

**ASSESSMENT OF THE EFFECTS OF MANAGEMENT:**

All the 20 cases were treated with **“ ī (Kumari Mathirai)** internally and **“ ” (Nochi Thylam)** externally. Thokkanam, Otradam and Asanas were also advised. The results of treatment were assessed on the basis of reduction in symptoms such as pain, joint swelling, and a sense of well being. The patients were treated for about 45 days. At the end of the treatment the results were discussed as follows: Improved, Partially improved and no improvement.

45% of the cases improved well.

40% of the cases were partially improved and

15% of the cases showed no improvement.

At the end of the treatment there was a rise in Hb level and decreased in ESR level in all the cases. After discharge the patients were advised to attend the post graduate department of Sirappu maruthuvam O.P. for further follow up.

During the course of treatment diet restrictions was strictly advised. Patients were advised to take preventive measures like avoiding exposure to chill weather. They were advised to take bath in warm water.

# SUMMARY

Valiazhal Keelvayu is very well correlate to Rheumatoid arthritis in modern medicine. It is one among a common problem in clinical practice. It has received an international attention in search of finding out of a new drug for the ailment of the sufferers.

In Valiazhal Keelvayu, usually small joints are affected in symmetrical manner. Joint pain, Swelling, tenderness which may be aggravated on motion. Morning stiffness of 2 to 3 hours duration, easy fatigability, anaemia, occasional fever are the common manifestation of the disease.

The study on Valiazhal keelvayu (R.A) was with trial drugs.

1. **“ ī (Kumari Maathirai)** 1 tablet with jaggery B.D. Internal.

2. **“ ” (Nochi Thylam)** External.

Twenty cases of both sexes and of various age groups were chosen and the study was carried out. 90% Valiazhal Keelvayu patients were female.

90% of the patients belonged to Pitha kaalam. 40% of the cases were seemed to develop the disease during Muthuvenil kaalam (Aani-Aadi). Most of the cases (75%) came from Marutha Nilam. Seventy five percent of cases belonged to poor class families. Considering aetiology 15% of the cases had a positive family history.

85% of the cases had a gradual on set of disease. All the cases had joint pain, swelling, morning stiffness. 90% of the cases had restricted movements. 75% of the cases had initial involvement of joints of the upper limb.

In all the cases proximal interphalangeal joints and Meta carpophalangeal joints were involved. 20% of the cases had deformities in their interphanlangeal, 15% metacarpophalangeal joints and 10% wrist and elbow joint.

Regarding Uuyir thathukkal, viyanan was affected in 100% of the cases. Abanan, Samanan were affected in 75% of cases. Aanala pitham, Ranjakam were affected 75% of the cases. Sathaka pitham was affected in 100% of cases. And santhigam were affected in all the cases, kilethagam was affected in 75% of cases.

Saaram, Seeneer, Kollupu and enbu were affected in all the cases. Regarding Enn Vagai Thervugal, sparism. Naadi were affected in all the cases. Neerkuri was found straw in colour. Neikuri indicated Vatha neer in 50% of the cases and Kaba Neer in 40 % of cases. Malam was affected in 75% of cases. 60% of the cases had moderate restriction but with an ability to perform normal activities.

R.A. factor was positive in eighteen cases. 75% of the cases showed a decrease in haemoglobin percentage. E.S.R. was raised in all the cases. The trial medicines were given to 20 Cases with Valiazhal keel vayu.

The internal drug was **“ ” (Kumari Maathirai)** in the dose of 1 tablet in jaggery twice a day after food.

The external drug was **“ ” (Nochi Thylam)** which was applied externally to the affected joints.

Hot water and Nochi leaf fomentation was given after the application of external drug. All the patients were advised to follow the balanced dietary habit. All the patients were also advised to follow the preventive measures like avoiding exposure to cold weather and advised to take bath in warm water. The observation made during this study, showed that the trial medicines were clinically effective.

The potency of the drugs were studied by pharmacological and biochemical analysis. It shows that the drugs have significant, acute and chronic anti inflammatory, anti pyretic and analgesic actions.

# CONCLUSION

In this study, results were found to be good in 45% of the cases.

No adverse effects were noticed during the treatment period.

Further follow up of these patients showed good recovery and fine improvement in the general well beings as they could carry out their day to day activities.

The preparations of both medicines are simple and expiry is upto one year. So they can be stored and used.

The trial medicine has significant acute and chronic anti inflammatory, analgesic and antipyretic actions.

Early diagnosis and prompt management prevents the disabilities and deformities resulting from Rheumatoid arthritis.

So it is concluded that the treatment with **“ ”** **(Kumari Mathirai) “ ” (Nochi Thylam)** is good in the view of efficacy and safety.

# PREPARATION OF TRIAL MEDICINES

## 1. INTERNAL MEDICINE – KUMARI MATHIRAI

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## II. EXTERNAL MEDICINE – NOCHI THYLAM

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# BIO - CHEMICAL ANALYSIS OF KUMARI MATHIRAI

## PREPARATION OF THE EXTRACT:

5gms of Kumari Mathirai was weighed accurately and placed in a 250ml clean beaker. Then 50ml distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It was cooled and filtered in a 100ml volumetric flask and then it is made up to 100ml with distilled water. This fluid is taken for analysis.

## QUALITATIVE ANALYSIS:

| S.No | Experiment | Observation | Inference |
|---|---|---|---|
| 1. | TEST FOR CALCIUM<br>2ml of the above prepared extract is taken in clean test tube. Add 2ml of 4% Ammonium oxalate solution is added to it. | No white Precipitate is formed | Absence of calcium |
| 2. | TEST FOR SULPHATE:<br>2ml of the extract is added to 5% barium chloride solution. | No white Precipitate is formed | Absence of Sulphate |
| 3. | TEST FOR CHLORIDE<br>The extract is treated with silver nitrate solution | No white Precipitate is formed | Absence of Chloride |
| 4. | TEST FOR CARBONATE:<br>The substance is treated with concentrated HCL. | No brisk Effervessence is formed | Absence of Carbonate |
| 5. | TEST FOR STARCH:<br>The extract is added with weak Iodine solution. | No blue colour is formed | Absence of Starch. |
| 6. | TEST FOR IRON FERRIC: The extract is treated with glacial acetic acid and potassium Ferro cyanide. | No blue Colour is formed | Absence of ferric Iron. |

| | | | |
|---|---|---|---|
| 7. | TEST OF IRON FERROUS:<br>The extract is treated with concentrated Nitric acid and ammomuin thio cynate: | Blood Red colour is formed | Indicates the presence of ferrous Iron |
| 8. | TEST FOR PHOSPHATE<br>The extract is treated with ammonium Molybdate and concentrated nitric acid | No yellow Precipitate is formed | Absence of phosphate |
| 9. | TEST FOR ALBUMIN<br>The extract is treated with Esbach's reagent | No yellow Precipitate is formed | Absence of Albumin |
| 10. | TEST FOR TANNIC ACID<br>The extract is treated with ferric chloride reagent | Blue black Precipitate is formed | Indicates the presence of Tannic acid |
| 11. | TESTFOR UNSATURATION<br>Potassium permanganate solution is added to the extract | It gets decolourised | Indicates the presence of unsaturated compound |
| 12. | TEST FOR THE REDUCING SUGAR:<br>5ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 mts and added 8-10 drops of the extract and again boil it for 2 mts. | Colour change occurs | Indicates the presence of reducing Sugar |
| 13. | TEST FOR AMINO ACID:<br>One or two drops of the extract is placed on a filter paper and dried it well after drying 1% Ninhydrin is sprayed over the same and dried it well. | No Violet colour is formed | Indicates the Absence of Amino acid |

# PHARMACOLOGICAL ANALYSIS

## ANALGESIC STUDY OF KUMARI MAATHIRAI

### AIM

To study the effects of analgesic action on Albino rats by Tail - Flick method.

### INSTRUMENTS

Dolonometer (or) Analegesic using heated nicrome wire a source of stimulus.

### PROCEDURE

6 albino rats were selected on either sex and divided into 2 groups. Each group having 3 rats were weighting between 100 – 150 gm. The rat is holded on the instrument. So that the tail lies over the nichrome wire on analgesiometer without touching it. To heat the nicrome wire by switching it on and at the same time starting a stop watch. The time takes for the rat to flick the tail was noted. This is the reaction time. This was noted for each rat and the average was calculated. This is kept as control volume.

Paracetamol was administered at a dose of 20 mg / 100 mg of body weight orally to the second group of rats, the reaction time was noted after the administration of ½ hr. and one hour and the average is calculated. The test does was given for the third group of rats.

The result of test drug is compared with the standard as well as control group

| S.No. | Group | Dose-100 gm of body weight | Initial Readings in second | After ½ hr in second | After 1 hr in second | After 1 ½ hr in second | Mean Difference |
|---|---|---|---|---|---|---|---|
| 1. | Control | Water – 2ml | 2.5 Secs | 2.5 Secs | 2.5 Secs | 2.5 Secs | 2.5 Secs |
| 2. | Standard | Paracetamol – 20 mg | 2.5 Secs | 3.5 Secs | 5.0 Secs | 6.5 Secs | 6.5 Sec |
| 3. | Test drug | Kumari Maathirai 100mg | 2.5 Secs | 3.0 Secs | 4.0 Secs | 5.5 Secs | 5.5 Sec |

**INFERENCE:**

From the above tabulation it is noted that Kumari Maathirai has **Significant analgesic** action.

## ANTI-PYRETIC STUDY ON KUMARI MAATHIRAI

**AIM**

To study the anti-pyretic activity of the Kumari Maathirai.

**PROCEDURE**

Three groups of healthy albino rats were taken, each weigh about 100-200gm and divided into three groups, each group consists of 2 rats. All the rats were made hyperthermic by subcutaneous injection of 12% suspension of Yeast at a dose of 100ml/100mg body weight.

10 hrs later one group of rats were given the test drug Kumari Maathirai at a dose of 1 ml at a dose of 100 mg/100 gm of body weight. The other group received distilled water at a dose of 1 ml/100 gm of body weight and kept as control. The last group was given Paracetamol at a dose of 100 mg/ 100 gm body weight and kept as standard.

The mean rectal temperature for 3 groups was recorded at 0 hr, ½ hr, 3 hr, 4 ½ hrs after the drug administration. The difference in mean temperature between the 3 groups were noted and compared.

| Group | Dose volume orally/100gm bw | Mean temperature | | | |
|---|---|---|---|---|---|
| | | Initial | ½ hr | 3 hr | 4 ½ hr |
| Control | 1 ml | 36.0<br>37.0 | 36.0<br>37.0 | 36.0<br>38.0 | 38.0 |
| Paracetamol | 20 mg | 37.0<br>38.0 | 37.0<br>37.0 | 36.5<br>36.5 | 34.5 |
| Kumari Maathirai | 100mg | 37.0<br>37.0 | 37.0<br>37.0 | 36.0<br>36.0 | 35.0 |

**Inference -** The test drug Kumari Maathirai significant anti pyretic action.

## ACUTE ANTI-INFLAMMATORY ACTIVITY IN RATS BY HIND-PAW METHOD

**AIM**

To demonstrate the acute anti-inflammatory activity of Kumari Maathirai in albino rats by Hind-paw method.

**PROCEDURE:**

Nine Albino rats weighing 100-150gm were taken and divided into three groups and each group consisting three rats.

First group was kept as control and received water. Second group received Ibuprofen at a dose of 20mg/100gm-body weight. Third group animals received Kumari Maathirai suspension at a dose of 200mg/100gm-body weight.

Before administration of drugs, the Hind-paw volume of all the rats was measured. This was done by dipping the Hind-paw upto the tibio-tarsal junction in mercury plethysmograph. Soon after the measurement at the drugs were administered. One hour after the administration of drugs a sub-cutaneous injection of **0.1ml** of 1%/W/V of carrageenin in water was made into planter surface of both the Hind-paw of each rat.

Three hours after carrageenin injection, the Hind-paw volume was measured once again. Difference between the initial and final value were noted and compared.

This method is more suitable method for studying anti-inflammatory activity in acute inflammation.

**THE EFFECT OF KUMARI MAATHIRAI IN ACUTE ANTI-INFLAMMATORY ACTIVITIES.**

| Group | Dose volume orally | Initial reading | Final reading | Mean difference | Percentage Inflammation | Percentage Inhibition |
|---|---|---|---|---|---|---|
| Control | Water 2 ml | 0.55 | 1.4 | 0.85 | 100 | - |
| Standard | Ibuprofen 20mg/100gm | 0.55 | 0.85 | 0.3 | 35.2 | 64.8 |
| Test drug | 200mg/100gm | 0.7 | 0.95 | 0.25 | 29.4 | 70.6 |

**RESULT:**

The drug Kumari Maathirai has Significant acute – anti inflammatory action.

## CHRONIC ANTI-INFLAMMATORY STUDY BY COTTON-PELLETS GRANULOMA METHOD

**DRUG**

Kumari Maathirai (Internal use)

**AIM**

To study the chronic anti-inflammatory activity of the drug in albino rats by cotton pellets implantation (granuloma) method.

**PROCEDURE:**

Cotton pellets each weighing long was prepared and sterilized in an autoclave for about one hour under 15 lbs atmosphere pressure. Nine Albino rats weighing between 100-200gm were selected and were divided into 3 groups. Each rat was anaesthetized with ether and cotton pellets were implanted subcutaneously in the groin, two in each side.

From the day of implantation, one group of animals received Kumari Maathirai. at a dose of 200mg/100gm of body weight.

On the eighth day the rats were sacrificed and the pellets were removed weighed. Then they were put in an incubator at 60ºC-80ºC and then weighed.

The concordant weight was noted for all groups and compared.

**THE EFFECT OF KUMARI MAATHIRAI IN CHRONIC ANTI INFLAMMATORY STUDY.**

| Group | Dose given orally | Concordant weight in mgs | Percentage inflammation | Percentage inhibition |
|---|---|---|---|---|
| Control | Water 2ml | 250 | 100 | - |
| Standard | Ibuprofen 20mg/100gm body weight | 55 | 22 | 78 |
| Test drug | 200mg/100gm body weight | 110 | 42 | 58 |

**INFERENCE :**

The drug show **Significant Chronic –** anti inflammatory action.

## ACUTE ANTI – INFLAMMATORY STUDY ON NOCHI THYLAM (External use)

### By Hind – Paw method in Albino Rats

**AIM**

To study the acute antiinflammatory activity of the test drug Nochi Thylam

**PROCEDURE**

Six healthy albino rats weighing 100 -150 gm, were taken and divided into two groups, each consisting of 3 rats.

First group was kept as control by giving distilled water 2 ml/ 100 gms of body weight. The second group was kept as test group.

Before application of test drug, the hind – paw volume of all rats were measured. This was done by dipping the hind – paw (upto tibiotrasal junction) into a mercury plethysmography. While dipping the hind paw, by pulling the syringe piston, the level of mercury in the ventre small tube was made to coincide with red marking and reading was noted from the plethysmograph.

One hour later, a sub – cutaneous injection of 0.1 ml of 1% (W/V) carrageenin in water was made into plantar surface of both hind – paw of each rat. To the second test group Nochi Thylam. was topically applied for three times over the inflamed surface in a thin layer with 30 minutes gap. To the other groups no drug was applied over the inflamed surface.

One and half hour after injection. The hind – paw volume was measured once again. The difference between the initial and final volume would show the amount of inflammation. Taking the volume in the control groups as 100% of inflammation, anti – inflammatory effect of the test group is calculated.

**EFFECT OF NOCHI THYLAM:**

| S.No. | Group | Dose/100gm Of body weight | Mean Difference | Percentage of Inflammation | Percentage of inhibition |
|---|---|---|---|---|---|
| 1. | Control | Water -2 ml | 0.85 | 100 | - |
| 2. | Standard | 20 mg | 0.3 | 35.2 | 64.8 |
| 3. | Test drug | External | 0.22 | 25.8 | 74.2 |

**INFERENCE:**

It is observed that Nochi Thylam has Significant acute anti inflammatory action.

**PROFORMA OF CASE SHEET**

**GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL**

**POST GRADUATE DEPARTMENT**

**PALAYAMKOTTAI. TRIRUNELVELI – 627 002**

**Branch – III Sirappu Maruthuvam**

Dissertation done by:

| | | | |
|---|---|---|---|
| I.P. No | : | Occupation | : |
| Bed No | : | Income | : |
| Ward | : | Nationality | : |
| Name | : | Religion | : |
| Age | : | Date of Admission | : |
| | | Date of Discharge | : |
| Sex | : | Diagnosis | : |
| | | Result | : |
| | | Medical Officer | : |

Permanent Address :

Complaints and duration :

History of present illness :

History of Previous illness :

Personal history including habits:

Family History :

## GENERAL CONDITIONS ON EXAMINATION

1. Consciousness :

2. Nourishment :

3.Anaemia :

4. Jaundice :

5. Cyanosis :

6. Clubbing :

7. Lymphadenopathy :

8. Jugular Venous Pulsation :

9. Engorged Veins :

10. Pedal oedema :

11. Temperature :

12. Pulse :

Rate :
Rhythm :
Volume :
Character :

13. Respiratory Rate : /min

14. Heart Rate : /min

15. Blood pressure : mm of Hg

| | Right | Left |
|---|---|---|
| Upper limb | | |

16. Miscellaneous :

Body weight :

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# LABORATORY INVESTIGATION

**Before Treatment**

1. BLOOD:

TC : cells/ cu. Mm

DC : P %

L %

E %

M %

ESR :

½ hour : mm

I hour : mm

Hb :

Blood Sugar :

Blood Urea :

Serum Cholesterol :

Uric Acid :

VDRL :

2. URINE

Albumin :

Sugar :

Deposits :

3. Motion

Ova :

Cyst :

4. IMMUNOLOGICAL :

RA Factor :

**After Treatment**

1. BLOOD:

TC : cells/ cu. mm

DC : P %

L %

E %

M %

ESR :

½ hour : mm

I hour : mm

Hb :

5.RADIOGRAPHIC FINDINGS :

6. SEROLOGICAL TEST FOR SYPHILIS :

7. SYNOVIAL FLUID ANALYSIS :

8. ARTHROGRAPHY :

## 1. LOCOMOTOR SYSTEM

INSPECTION

Overlying Skin:

- Colour :
- Scars and ulcers :
- Periarticular swelling :
- Deformity :
- Unusual posture :
- Muscle changes :
- Symmetrical distribution :
- Gait :

Palpation:

- Skin Temperature :
- Crepitus :
- Sub-cutaneous nodules :
- Rheumatoid vasculitic lesion:
- Lymphadenopthy :

Enlargement:

- Soft Tissues :
- Bony Enlargement :

Range of Movements :

Examination of individual joints:

- Cervical Spine :
- Thoracic Spine :

Lumbar Spine :

Sacro-illac Joint :

Shoulder Joint :

Elbow Joint :

Wrist Joint :

Metacarpophalangeal joint :

Interphalangeal Joint :

Hip Joint :

Knee joint :

Metatarso phalangeal Joint:

Examination of individual joints (Affected Joints)

Measurement (in cm) :

Before and After Treatment:

| | RIGHT | | LEFT | |
|---|---|---|---|---|
| | BEFORE | AFTER | BEFORE | AFTER |
| Knee Joint | | | | |
| Ankle Joint | | | | |
| Wrist Joint | | | | |
| Elbow joint | | | | |
| Index finger | | | | |
| Middle finger | | | | |
| Ring finger | | | | |
| Little finger | | | | |

EXAMINATION OF OTHER SYSTEMS:

1. Respiratory system :

2. Cardio Vascular system :

3. Gastro Intestinal system :

4. Central Nervous system :

5. Genito – Urinary Systam :

**DAILY PROGRESS**

| DATE | SYMPTOMS | DRUG |
|---|---|---|
| | | |

**CLINICAL PARAMETERS AND PROGRESS**

| S.No | Clinical Feaures | During I day of Admission | 5th day | 10th day | 15th day | 20th day | 25th day | 30th day | 40th day |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Pain in Joints | | | | | | | | |
| 2 | Early Morning Stiffness | | | | | | | | |
| 3 | Tenderness and swelling of joints<br>Knee<br>Ankle<br>Wrist<br>MCP<br>PIP | | | | | | | | |
| 4 | Depression | | | | | | | | |
| 5 | Loss of appetite | | | | | | | | |
| 6 | Fever | | | | | | | | |
| 7 | Restriction of Joints Movements | | | | | | | | |
| 8 | Sub | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | cutaneous nodules | | | | | | | | |
| 9 | Deformity | | | | | | | | |
| 10 | Muscle Weakness | | | | | | | | |
| 11 | Muscle Wasting | | | | | | | | |
| 12 | Ulnar Deviation | | | | | | | | |
| 13 | Entrapment Neuropathy | | | | | | | | |

+++ - Severe

++ - Moderate

+ - Mild

- - Nil

DIFFERENTIAL DIAGNOSIS

FINAL DIAGNOSIS:

LINE OF TREATMENT

MEDICINE

MEDICAL ADVICE

**GOVERNMENT SIDDHA MEDIDCAL COLLEGE HOSPITAL,**

**POST GRADUATE DEPARTMENT,**

**PALAYAMKOTTAI, TIRUNELVELI-627 002**

**BRANCH – III SIRAPPU MARUTHUVAM.**

**ADMISSION-DISCHARGE SHEET FOR "VALI AZHALKEEL VAYU"**

**IP No :** **Occupation :**

**Bed No :** **Income :**

**Ward :** **Nationality :**

**Name :** **Religion :**

**Age :** **Date of Admission :**

**Sex :** **Date of Discharge :**

**Permanent Address:** **Diagnosis :**

**Result :**

**Temporary Address:** **Medical officer :**

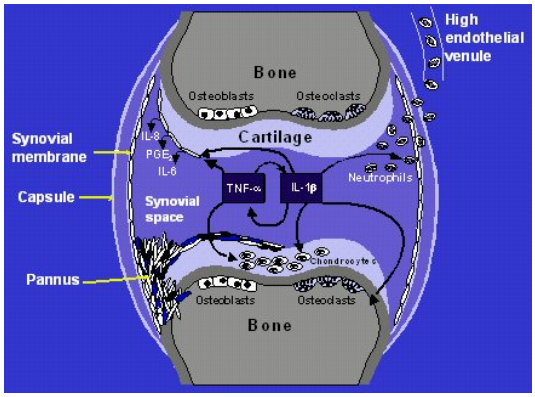
**CLINICAL PICTURES**

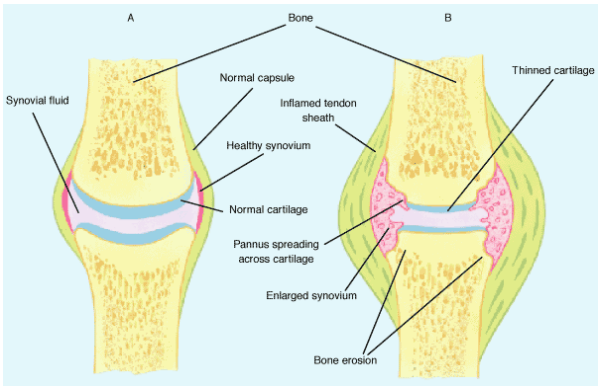
| Sl.No. | During Admission | During Discharge |
|---|---|---|
| | | |

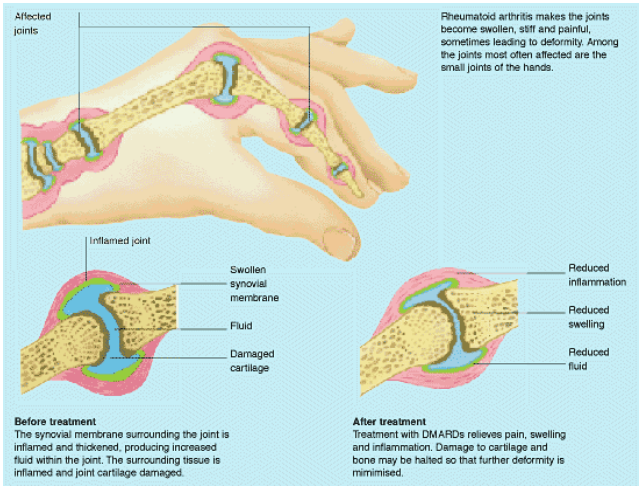
**PLACE:**

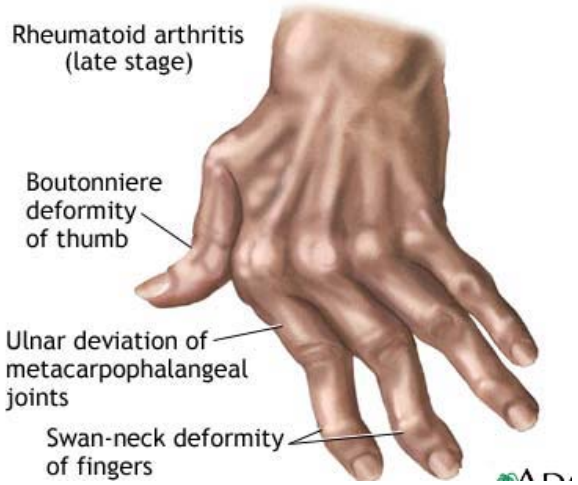
**DATE:** **Signature of Medical Officer.**

# PATHOLOGICAL PROCESS RHEUMATOID ARTHRITIS

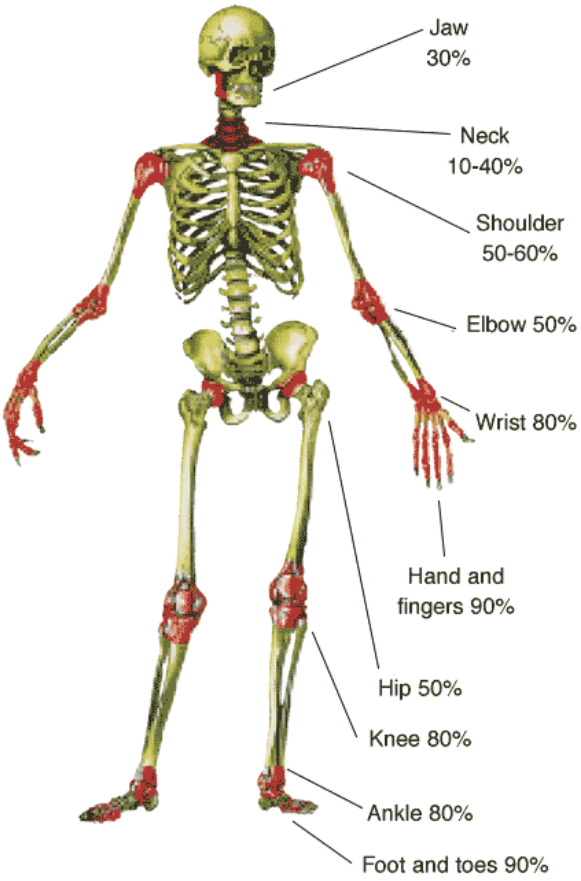


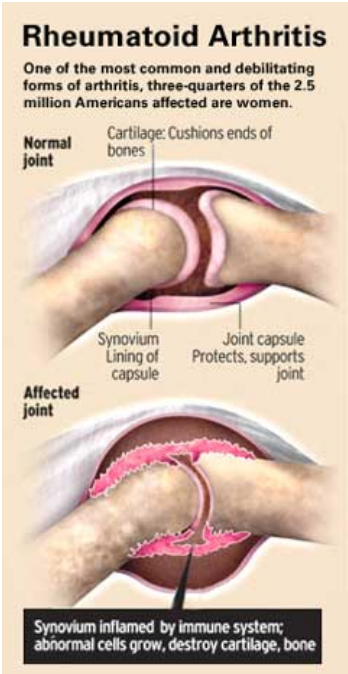



# INVOLVEMENT OF JOINTS IN RHEUMATOID ARTHRITIS



# SELF HELP TECHNIQUES OF RHEUMATOID ARTHRITIS PATIENTS

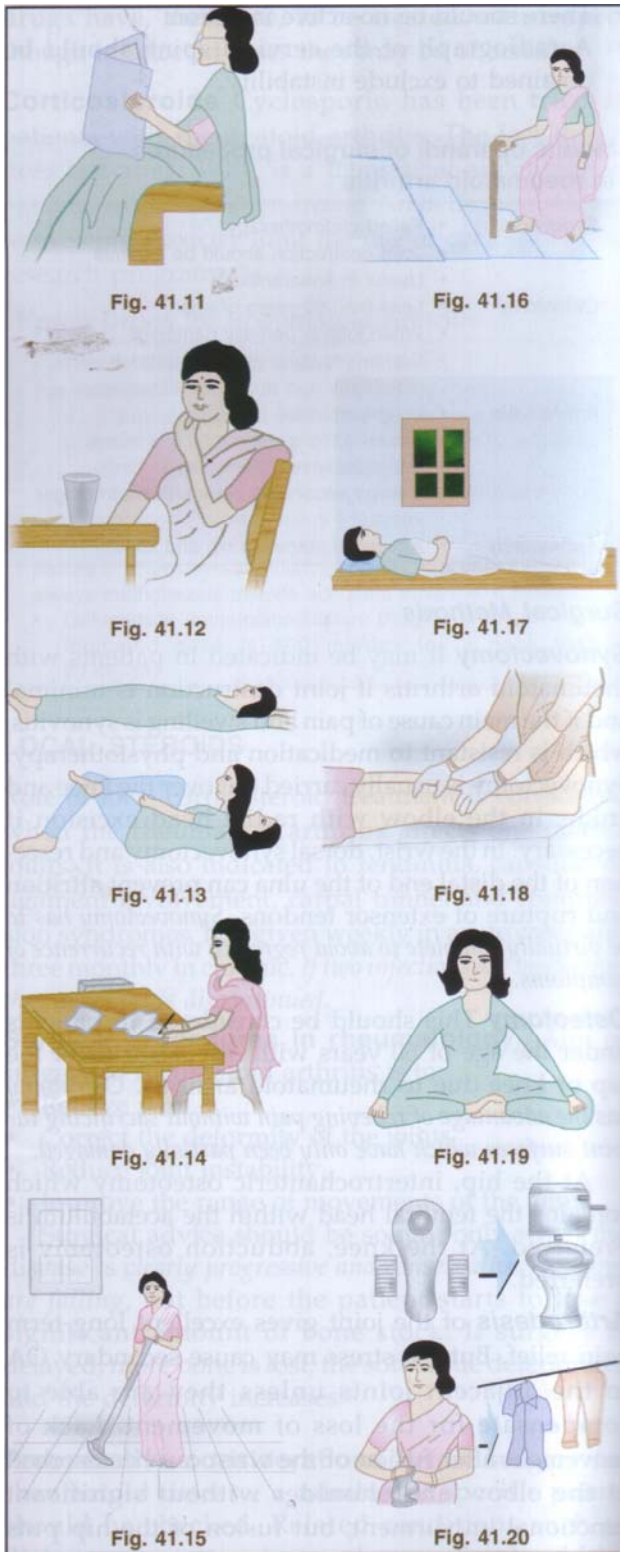


Fig. 41.11

Fig. 41.12

Fig. 41.13

Fig. 41.14

Fig. 41.15

Fig. 41.16

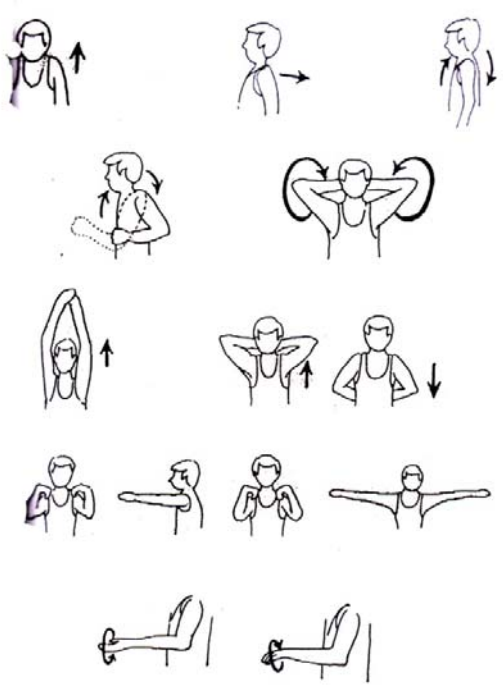
Fig. 41.17

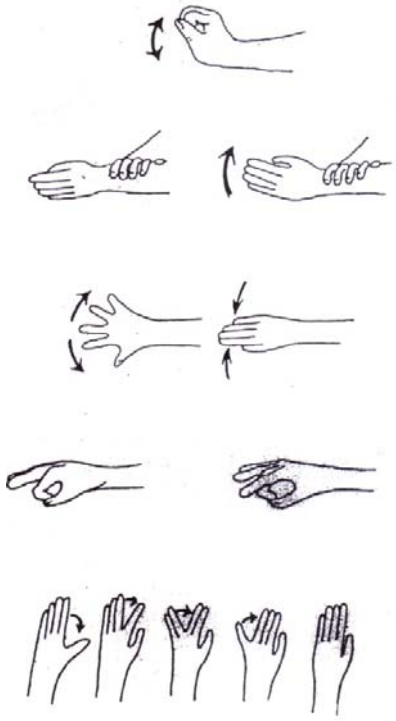
Fig. 41.18

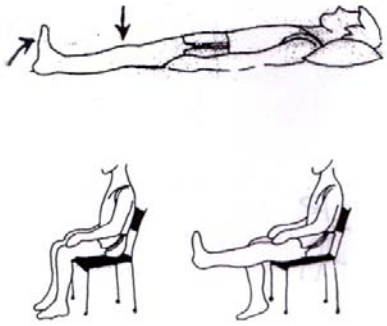
Fig. 41.19

Fig. 41.20

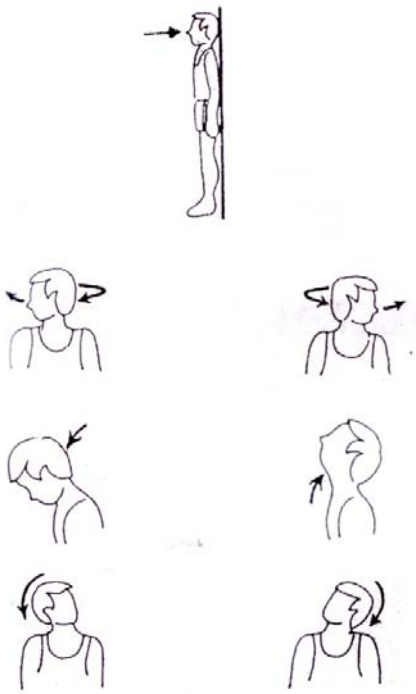
# TYPES OF EXERCISES







**NECK EXERCISES**



## P.PATHIRAKALI – I.P NO: 1212



**Flexion Deformity**



**Flexion Deformity**

## S. DEIVAKANI – I.P NO: 2644

**Swan neck Deformity**

# K. PITCHAMMAL – I.P NO: 2269


**Ulnar drift**

**Sub cutaneous nodules**


# I. ARPUTHA MARRY – I.P NO:2340


**Flexion deformity** **Cervical spondylosis**

## A. MURUGAKANI – I.P NO:2758



## N. TAMILSELVI – I.P NO: 421




## OTTRADAM WITH NOCHI LEAF


## NEIKURI

## SAVA ASANA

# KUMARI MATHIRAI

Kadukkai

Vilvam Root

Neem Gum

Katrali

Kumari Mathirai

# NOCHI THYLAM

Nochi

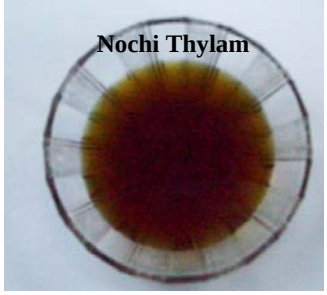
Gingilee Oil

Dill

Erukku

Kottam

Thagarai



Nochi Thylam

**BEFORE TREATMENT** **AFTER TREATMENT**





I.P.No.1212 I.P.No.1212


**BEFORE TREATMENT** **AFTER TREATMENT**




**Haematological Investigation and Urine Analysis of 20 IP Patients**

| S.No | IP.No | Haematological Investigation | | | | | | | | | | | | | | Urine Analaysis | | | | | | Motion Analaysis | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WBC Total Count Cu m.m | | WBS Differential Count Cu m.m | | | | | | E.S.R mm/hr | | | | HB | | BT | | | AT | | | BT | | AT | |
| | | BT | AT | BT | | | AT | | | BT | | AT | | BT | AT | | | | | | | | | | |
| | | | | P% | L% | E% | P% | L% | E% | 1/2 hr | 1 hr | 1/2 hr | 1 hr | | | Alb | Sug | Dep | Alb | Sug | Dep | Ova | Cyst | Ova | Cyst |
| 1 | 2163 | 9200 | 9600 | 56 | 32 | 12 | 50 | 48 | 2 | 45 | 85 | 10 | 20 | 61% | 71% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 2 | 2340 | 9900 | 10000 | 70 | 28 | 2 | 50 | 50 | 0 | 40 | 85 | 8 | 15 | 64% | 78% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | Occ. EC | NIL |
| 3 | 2644 | 8600 | 8900 | 57 | 40 | 3 | 54 | 66 | 0 | 45 | 85 | 12 | 25 | 60% | 71% | NIL | NIL | NIL | NIL | NIL | Few PC | NIL | NIL | NIL | NIL |
| 4 | 2748 | 8900 | 9000 | 70 | 26 | 4 | 49 | 50 | 1 | 18 | 40 | 7 | 15 | 60% | 72% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 5 | 2758 | 8200 | 8500 | 56 | 40 | 4 | 50 | 49 | 1 | 25 | 50 | 10 | 15 | 58% | 69% | NIL | NIL | NIL | NIL | NIL | Few EC | NIL | NIL | NIL | NIL |
| 6 | 3074 | 9100 | 9200 | 62 | 36 | 2 | 51 | 49 | 0 | 22 | 45 | 8 | 15 | 60% | 72% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | Occ. EC | NIL |
| 7 | 32 | 9600 | 9800 | 60 | 36 | 4 | 52 | 48 | 0 | 25 | 55 | 5 | 10 | 57% | 65% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 8 | 255 | 9000 | 9300 | 48 | 48 | 4 | 49 | 50 | 1 | 35 | 70 | 10 | 20 | 60% | 70% | NIL | NIL | NIL | NIL | NIL | Few EC | NIL | NIL | NIL | NIL |
| 9 | 421 | 7000 | 7300 | 55 | 40 | 5 | 49 | 51 | 0 | 40 | 80 | 7 | 20 | 59% | 69% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 10 | 447 | 9200 | 9400 | 58 | 42 | 0 | 52 | 48 | 0 | 42 | 82 | 8 | 18 | 60% | 72% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 11 | 1212 | 9200 | 9500 | 68 | 28 | 4 | 50 | 49 | 1 | 30 | 65 | 15 | 25 | 61% | 69% | NIL | NIL | NIL | NIL | NIL | Few PC | NIL | NIL | NIL | NIL |
| 12 | 1502 | 9200 | 9300 | 50 | 48 | 2 | 50 | 50 | 0 | 24 | 48 | 5 | 10 | 65% | 79% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 13 | 1501 | 9800 | 9900 | 50 | 48 | 2 | 50 | 49 | 1 | 16 | a | 7 | 15 | 60% | 71% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 14 | 1565 | 9100 | 9200 | 59 | 40 | 1 | 50 | 49 | 1 | 23 | 48 | 12 | 20 | 70% | 78% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 15 | 1564 | 8800 | 8900 | 70 | 27 | 3 | 50 | 49 | 1 | 26 | 50 | 12 | 24 | 68% | 76% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 16 | 1607 | 8800 | 8900 | 69 | 28 | 3 | 50 | 48 | 2 | 40 | 88 | 15 | 22 | 68% | 76% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 17 | 1616 | 9000 | 9100 | 60 | 38 | 2 | 50 | 50 | 0 | 20 | 40 | 5 | 10 | 60% | 69% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 18 | 1788 | 8700 | 8900 | 59 | 40 | 1 | 50 | 49 | 1 | 44 | 89 | 12 | 24 | 50% | 59% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 19 | 2230 | 8400 | 8700 | 57 | 40 | 3 | 50 | 49 | 1 | 40 | 82 | 15 | 28 | 68% | 71% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| 20 | 2269 | 8400 | 8600 | 69 | 30 | 1 | 60 | 40 | 0 | 40 | 80 | 15 | 25 | 60% | 68% | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |

P- Polymorph L - Lymphocyte E - Eosinophil Hb - Haemoglobin ESR - Erythrocyte Sedimentation Rate Alb - Albumin Sug - Sugar Dep - Deposit Occ. EC - Occationally Epithelial Cells Few PC - Few pus cells BT - Before Treatment AT - After Treatment